

1050MD/DM-5090

DM-9090

SERVICE MANUAL

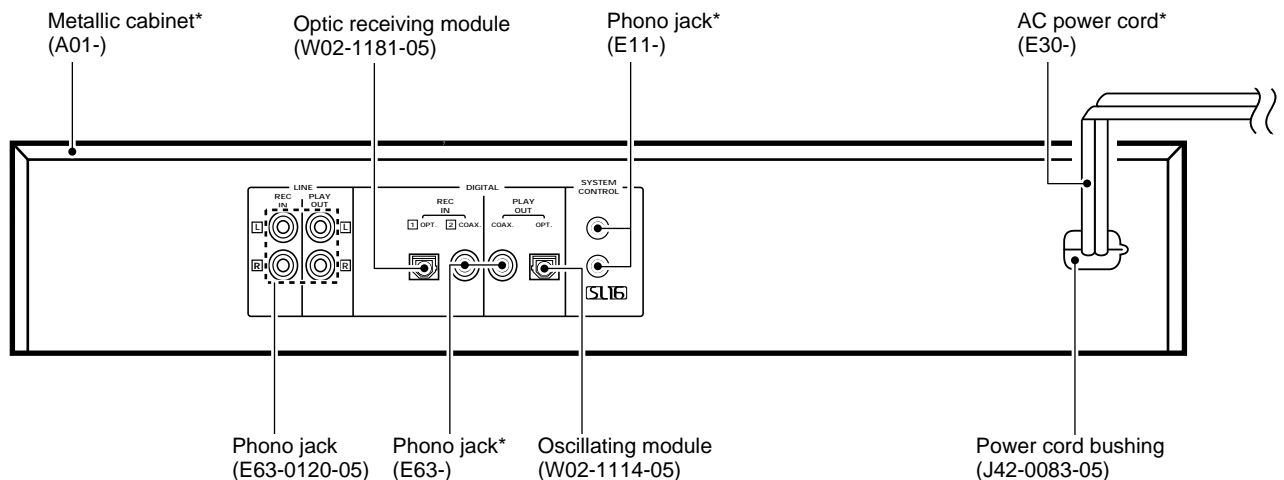
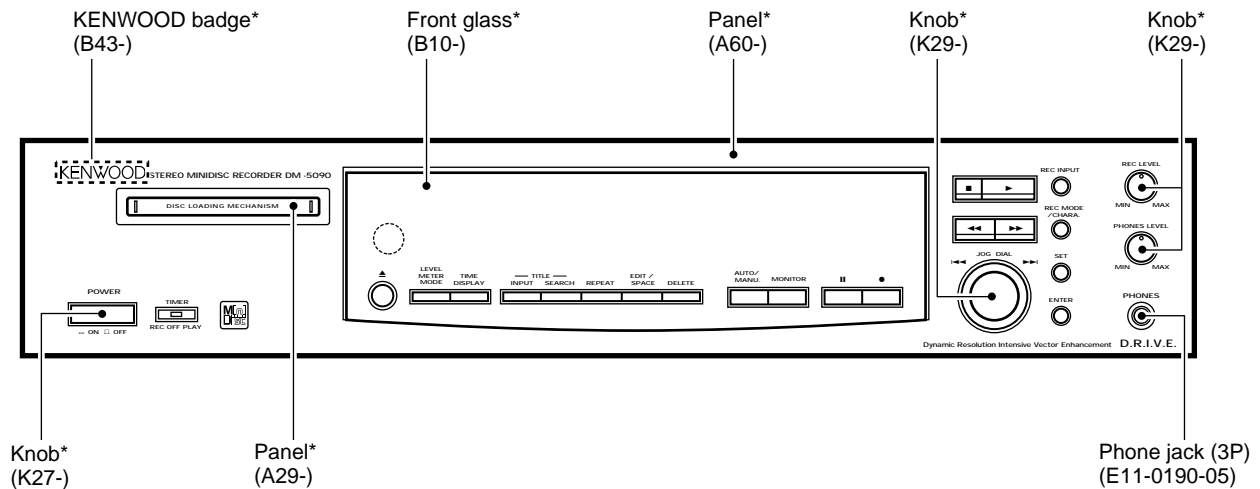


Illustration is DM-5090.

***Refer to parts list on page 40.**

In compliance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety,

KENWOOD-Corp. certifies this equipment conforms to DHHS Regulation No.21 CFR 1040.10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

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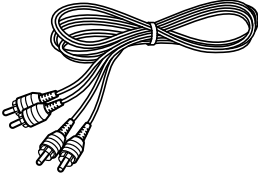
CONTENTS/ACCESSORIES/CAUTIONS

CONTENTS

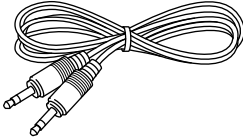
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Accessories


Audio cord (2)
(E30-0505-05)



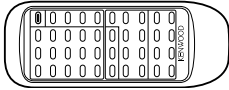
System control cord (1)
(E30-2733-05)



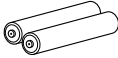
Optical fiber cable(1)
(B19-1529-05)



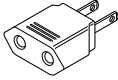
Remote control unit (1)
(A70-1141-05: RC-M0702)



Batteries (R6/AA) (2)



AC adaptor (1)
(E03-0115-05)



Battery cover: (A09-0362-08)

M type only

Cautions

Note related to transportation and movement

Before transporting or moving this unit, carry out the following operation.

1. Set the POWER key to ON without loading a Mini Disc.
 - Check that no disc is present in the unit.
2. Wait a few seconds and verify that the display shown appear.
3. Set the POWER key to OFF.

NO DISC

Beware of condensation

When water vapor comes into contact with the surface of cold material, water drops are produced. If condensation occurs, correct operation may not be possible, or the unit may not function correctly. This is not a malfunction, however, the unit should be dried. (To do this, turn the POWER switch ON and leave the unit as it is for several hours.)

Be especially careful in the following conditions :

When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
When a heater starts operating.
When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

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EXTERNAL VIEW

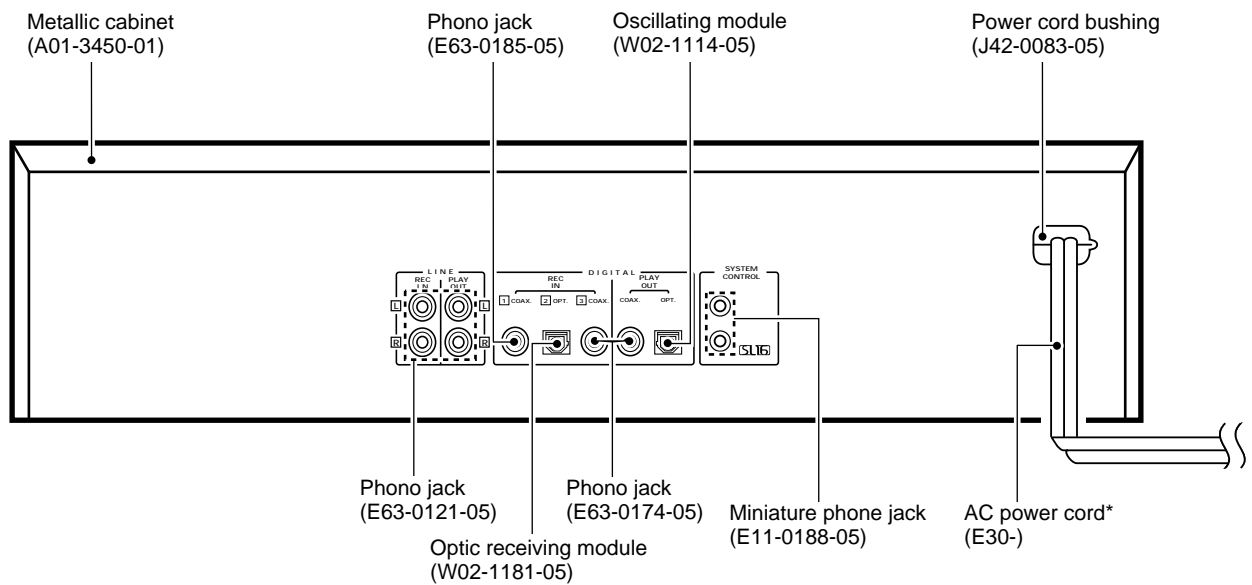
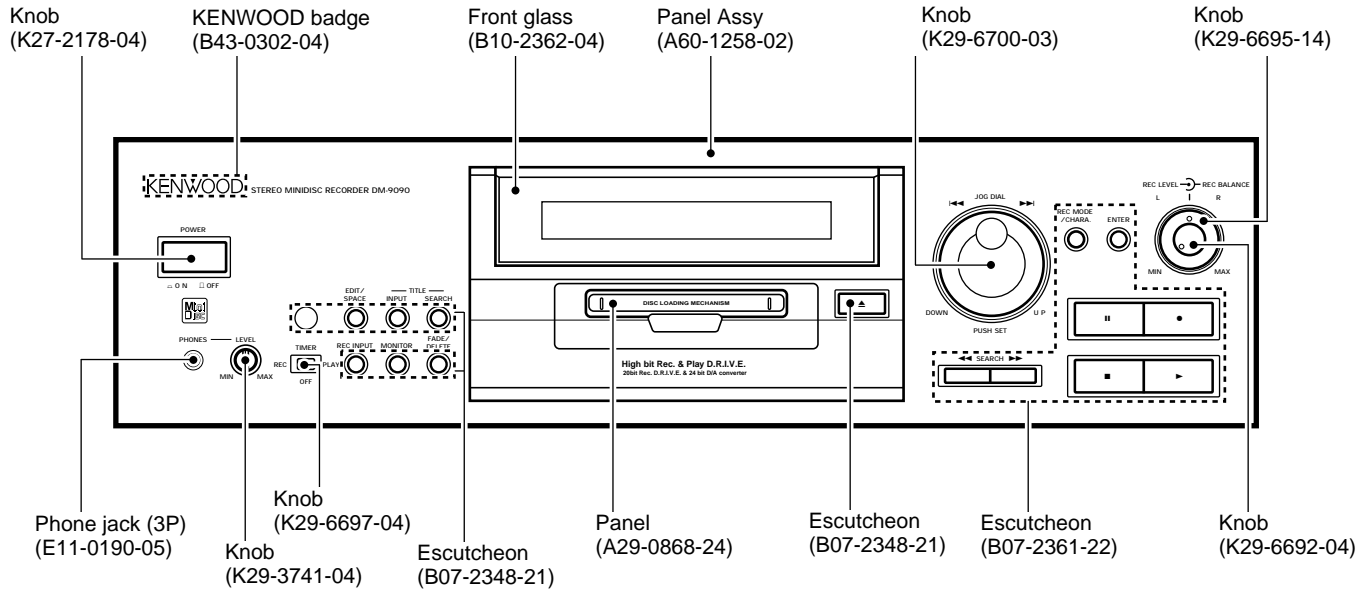


Illustration is DM-9090.

*Refer to parts list on page 40.



CIRCUIT DESCRIPTION

1. Mechanism microprocessor : uPD784215GF508 (X25- , IC31)

1-1 Pin description

No.	Name	I/O	Description
1,2	-	O	N.C.
3	EXLAT	O	Output port of latch signal to IC32 (TC74HC4094)
4	EXCK	O	Clock output port to IC32 (TC74HC4094)
5	RD	O	SRAM WR
6	WR	O	SRAM WR
7	CS	O	SRAM CS L; SRAM enable
8	STB	O	Output port of strobe signal to IC33
9	Vdd	-	Power supply (Microprocessor)
10	POWER	O	Power terminal H; Power ON
11	MUTE	O	Mute control output L; Mute ON
12	INISW2	I	Destination selector
13	SCHNG	O	E2PROM data IN/OUT change-over H; SDA output
14	SBUSY	I/O	16 serial busy
15	SDATA	I/O	16 serial data
16	SCL	O	Output port of clock signal to IC6 (X33)
17	SDA	I/O	Interface port of data signal from / to IC6 (X33)
18	LDON	O	Laser ON / OFF control port H; LD ON
19	RMS	O	Pick RMS H; ON
20	XLAT	O	System IC latch
21	SENS	I	System IC sens
22	GND	-	GND
23	PROTECT	I	Detection port of protect switch L; Protect ON
24	REFLECT	I	Detection port of reflect switch H; Low reflect
25	DISCIN	I	Detection of disc input switch L; Disc out SW ON
26	STTLMT	I	Detection port of limit switch L; Start limit SW ON
27	PHOTSW	I	Detection of mechanism play position L; Photo sensor ON
28	REC SW	I	Input port of detection from REC position switch L; REC SW ON
29	LOADIN	O	Output port of loading motor control signal L; Loading OUT
30	LOADOUT	O	Output port of loading motor control signal L; Loading IN
31	MNT0	I	FOK signal from CXD2652AR (IC2) L; Focus ON
32	MNT2	I	Input port of monitor 2 from CXD2652AR (IC2)
33	XRST	O	Output port of reset signal to CXD2652AR (IC2)
34	TX	O	Output port of recording permitted signal
35	RECP	O	Laser power control to CXD2652AR (IC2)
36	MNT3	I	Input port of monitor 3 from CXD2652AR (IC2)
37	Vdd	-	Power supply (Microprocessor)
38,39		-	Clock IN / OUT (12.5MHz)
40	GND	-	GND
41	OPEN	O	No used
42	GND	I	No used

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CIRCUIT DESCRIPTION

No.	Name	I/O	Description
43	RESET	I	Microprocessor hard reset
44	REM	I	Remocon signal input terminal
45	XINT	I	Input port of interrupted status from CXD2652AR (IC2)
46	CE	I	Microprocessor chip enable H; Enable / L; disable
47	SQSY	I	Input port of sub code Q from CXD2652AR (IC2)
48	DQSY	I	U-bit of digital IN / SUB Q sync input of CD format from CXD2652AR (IC2)
49	DDQSY	I	U-bit of digital IN / SUB Q sync input from LC8904Q (IC23)
50	MNT1	I	Input port of track jump detection from CXD2652AR (IC2)
51	Vdd	-	Microprocessor power supply
52	+5V	-	A/D reference voltage (+5)
53~56	KR0~KR3	I	Key return (KR0~KR3)
57	TMSW	I	Timer switch input
58	INISW1	I	Detection selector
59	BACK	I	Back up voltage detection
60	ENCB	I	Rotary encoder B
61	GND	-	GND
62	BACK ON	O	Back up change control
63	ENCA	I	Rotary encoder A
64	+5V	-	D/A reference voltage (+5V)
65	SRDT	I	Data for reading input from CXD2652AR (IC2)
66	SWDT	O	Data for writing to CXD2652AR (IC2)
67	SCLK	O	Serial clock to CXD2652AR (IC2)
68	CRXD	I	Communication to sub u-COM (IC28)
69	CTXD	O	Communication to sub u-COM (IC28)
70	CENA	I	Communication to sub u-COM (IC28) H; Comm enable
71	EXDT	O	Data output to TC74HC4094 (IC32)
72	FLDCE	O	Chip enable to FL driver
73	DRDT	I	Read data from LC8904Q (IC23)
74	DWDT	O	Data to LC8904Q (IC23) and LC75710NE (IC1)
75	DCLK	O	Clock to LC8904Q (IC23) and LC75710NE (IC1)
76	DLAT	O	Latch to LC8904q (IC23)
77	DEMPH	I	Emphasis from LC8904Q (IC23)
78	DSUB1	I	Sub 1 from LC8904Q (IC23)
79	DSUB2	I	Sub 2 from LC8904Q (IC23)
80	SRCLAT	O	Latch to SM5844AF (IC25)
81	BACKCHK	O	Back up voltage check
82	VCLK	O	Clock to SM5844AF (IC25)
83	VLDT	O	Data to SM5844AF (IC25)
84~91	AD0~AD7	O	SRAM address / data (AD0~AD7)
92~99	A8~A15	O	SRAM address (A8~A15)
100	Vss	-	GND

CIRCUIT DESCRIPTION

1-2. Initialization

POWER	= ON (DM-9090,DM-5090)
REC INPUT	= ANALOG
AUTO/MANUAL	= AUTO
FADE	= OFF
PLAY MODE	= TRACK
REPEAT	= OFF
TIME DISPLAY	= SINGLE(+)
LEVEL METER MODE	= NORMAL MODE
DIGITAL REC LEVEL	= 0dB
AUTO TNO TIME	= 2 sec
AUTO TNO LEVEL	= 3 (-50dB)
FADE TIME	= 3 sec
REC END WRITE	= ON
DRIVE	= ON
PRESET TITLE	= PRE1 : Pops PRE2 : Rock PRE3 : Classic PRE4 : Jazz PRE5 : Disco PRE6 : Best Hits PRE7 : Air Check PRE8 : No. PRE9 : Vol.

1-3. Switch control table

INI SW1	
AVref(0.8~1.0AVref)	Mecha. u-COM MODE
0.7AVref(0.6~0.8AVref)	-
0.5AVref(0.4~0.8AVref)	DMF-7002S (J type)
0.3AVref(0.2~0.4AVref)	DM-9090
0.0AVref(0.0~0.2AVref)	DM-5090

(AVref=Vdd)

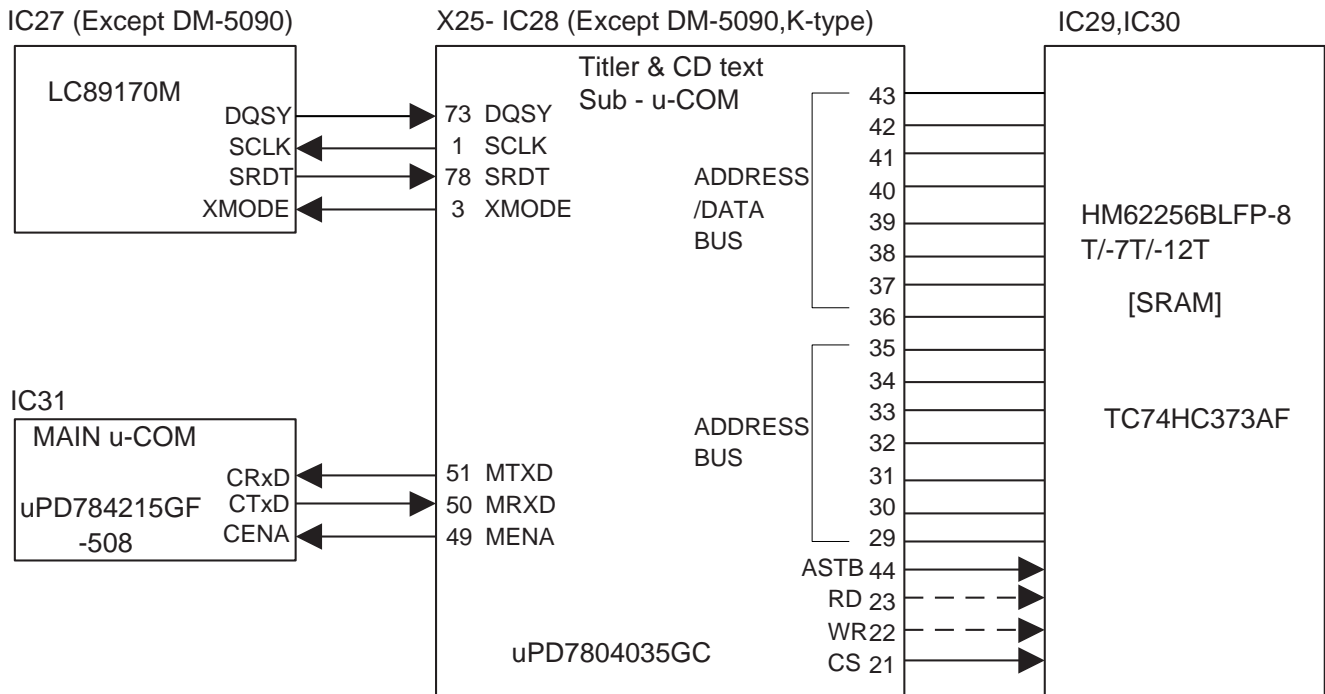
INI SW2	
High	Overseas : No katakana character : No cyber titler
Low	Japan : Katakana character : Cyber titler

1-4. Key voltage matrix

	0.00V ~0.78V	0.80V ~1.59V	1.61V ~2.39V	2.41V ~3.20V	3.22V ~3.98V	4.00V ~4.98V
KR0	POWER	EJECT	PAUSE	-	FF	-
KR1	STOP	REC	PLAY	-	FB	TT SEARCH
KR2	DEL	SPACE /EDIT	TT. INPUT	REC. INPUT	MONI -TOR	TIME DISP
KR3	SET	ENTER	CHR / REC	AUTO / MANUAL	LEVEL METER MODE	REPEAT

2. Sub microprocessor : uPD784035GC (X25-,IC28)

2-1. Sub microprocessor periphery block diagram



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CIRCUIT DESCRIPTION

2-2 Pin description (uPD784035GC)

No.	Name	I/O	Description
1	SCLK	O	Text data read clock
2	N.C.	O	No used
3	XMODE	O	Text data decoder reset L: Power Down
4~6	N.C.	O	No used
7	RESET	I	Reset signal input
8	Vdd	-	Microprocessor power supply
9,10	X2,1	-	12.5MHz oscillator
11	Vss	-	GND
12~20	N.C.	O	No used
21	CS	O	Chip select for SRAM control H: Power Down
22	WR	O	Write strobe for SRAM control
23	RD	O	Read strobe for SRAM control
24~27	N.C.	O	No used
28	A15	O	No used
29~35	A14~A8	-	SRAM control terminal (address BUS), A14~A8
36~43	D7~D0	-	SRAM control terminal (address / data BUS) , D7~D0
44	STB	O	Address strobe signal output
45,46	GND	-	GND
47,48	N.C.	O	No used
49	CENA	O	Communication to main u-COM (enable)
50	CTXD	I	Communication to main u-COM (uart TXD)
51	CRXD	O	Communication to main u-COM (uart RXD)
52~55	N.C.	O	No used
56	Vdd	-	Microprocessor power supply
57~61	N.C.	I	GND
62	CTR	I	Cyber titler (J type only)
63	TXT	I	CD text (J type only)
64	Avdd	-	A/D power supply terminal (+5V)
65	AVref1	-	A/D reference voltage
66	AVss	-	A/D GND
67,68	N.C.	O	No used
69	AVref2	-	D/A reference voltage
70	AVref3	-	D/A GND
71,72	N.C.	I	Noused
73	DQSY	I	Text data reading permitted terminal L: Interrupt
74~77	N.C.	I	No used
78	SRDT	I	Text data reading line
79	RXD	I	Communication to cyber titler (UART) (J type only)
80	TXD	O	Communication to cyber titler (UART) (J type only)

CIRCUIT DESCRIPTION

3. Test mode of the unit

3-1 Setting of the test mode

While pressing the [STOP] key, plug the AC power cord into the AC wall outlet.

3-2 Contents of the test mode

① [DOT TEST]

② [SEG TEST]

❖③ [KEY TEST]

❖④ [CYBER TEST] J type only

❖Used for production line only

3-3 Function of the test mode

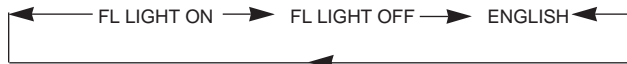
① [DOT TEST]

The FL display starts the "NIAGARA MODE" by pressing the [SET] key in the [DOT TEST] mode.

② [SEG TEST]

Turn the FL indication ON by pressing the [SET] key in the [SEG TEST] mode.

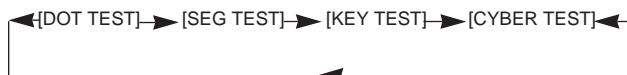
The FL indication changes cyclically as shown in the below by turning the JOG DIAL (I-◀▶I).



3-4 Function of the key

① JOG UP (▶▶I) and JOG DOWN (I◀◀)keys

: Selects the test mode.



: Selects the FL indication



② Set key

: Proceeds the test mode or return to test mode.

③ Stop key

: Cancel the test mode.

3-5 Microprocessor reset

The microprocessor can be initialized while pressing the [EJECT] key, plug the AC power cord into the AC wall outlet.

4. Mechanism test mode

4-1 Setting the test mode

Connect a plug of AC power cord to an outlet of AC, while pressing PLAY key.

4-2 Canceling the test mode

Unplug the AC power cord.

4-3 Basic operation in test mode

All operations are performed using the JOG DIAL (up/down), ENTER key, DELETE key, and SET key. The functions of each key are shown in the table below.

Function	Description
JOG DIAL(up/down)	Changes the parameter and mode.
ENTER key	Proceeds for definition.
DELETE key	Returns for interrupt.
SET key	Skip the mode and go to next step.

4-4 Selection of test mode

12 test modes are selected by turning the JOG DIAL.

No.	Display	Description	Section
1	TEMP ADJUST	The work of adjustment is unnecessary in this mode	-
2	LDPWR ADJUST	Laser power adjustment	5-5
3	LDPWR CHECK	Laser power check	5-5
4	EFBAL ADJUST	Traverse adjustment	5-6
5	FBIAS ADJUST	Focus bias adjustment	5-7
6	CPLAY MODE	Continuous playback mode	4-4-1
7	CREC MODE	Continuous recording mode	4-4-2
8	STT-LIMIT SW	Check the mechanism start limit SW position	-
9	JUMP MODE	Track jump checking mode	-
10	SRV DAT READ	Servo data reading	-
11	EEP MODE	E2PPROM data reading or rewrite	-
12	EEP INITIAL	E2PROM data initializing	-

For more information on each adjustment mode, refer to each section of 5, "Electrical adjustment".

If other adjustment mode has been entered incorrectly, press the DELETE key to exit the mode.

* The number 8 - 12 are not used for service. If these mode have been entered incorrectly, press the DELETE key immediately to exit the mode. Specially, do not use EEP INITIAL. (E2PROM data has initialized if used it.)

4-4-1 Operation in continuous playback mode

1. Entering the continuous playback mode

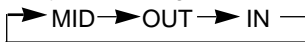
- (1) Insert a recordable disc or pre-mastered disc into the unit.
- (2) Turn the JOG DIAL to display "CPLAY MODE".
- (3) Press the ENTER key. The display then changes from "CPLAY MODE" to "CPLAY MID".
- (4) After the access operation is completed, the display changes from "CPLAY MID" to "C=#### a=##".

Note: Numerals on the display appear the error rate and ADIP error.

CIRCUIT DESCRIPTION

2. Change the playback point.

- (1) Press the ENTER key during continuous playback. The display then changes as follows.



- (2) After the access operation is completed, the display changes "C=####" a=##".

Note: Numerals on the display appear the error rate and ADIP error.

3. Terminating the continuous playback mode

- (1) Press the DELETE key. The display then changes to "CPLAY MODE".
 (2) Press the EJECT key to take out the disc.

Note : The playback start addresses of IN, MID, and OUT are described below.

IN 30H cluster
 MID 300H cluster
 OUT 700H cluster

4-4-2 Operation in continuous recording mode

1. Entering the continuous recording mode

- (1) Insert a recordable disc into the unit.
 (2) Turn the JOG DIAL to display "CREC MODE".
 (3) Press the ENTER key. The display then changes from "CREC MODE" to "CREC IN".
 (4) Press the ENTER key again. The display changes from "CREC IN" to "CREC (####)", and the continuous recording is started.

Note: Numerals on the display (####) appear the address of recording point.

2. Change the recording point.

- (1) Turn the JOG DIAL to clockwise while "CREC IN" is displayed. The display changes as follows. (The recording point can be shifted.)



- (2) Press the ENTER key. The display then changes to "CREC(####)", and the continuous recording is started.

Note : Numerals on the display (####) appear the address of recording point.

3. Terminating the continuous recording mode

- (1) Press the DELETE key. The display then changes to "CREC MODE" and the REC display goes off.
 (2) Press the EJECT key to take out the disc.

Notes :

1. The recording start addresses of IN, MID, and OUT are described below.

IN 30H cluster
 MID 300H cluster
 OUT 700H cluster

2. The DELETE key can be pressed at any time to stop the recording.

3. An erasure prevention control is not detected in the test mode. Be careful not to enter the continuous recording mode using a disc containing the data that should not be erased.

4. Do not record continuously for more than five minutes.

5. Take care that no vibration is applied during continuous recording.

4-5 Other key functions

Function	Description
▶	Plays back continuously when this key is pressed during stop. Turn on and off the tracking servo when it is pressed during continuous playback.
■	Stops the continuous playback and recording.
◀◀	The thread moves to the inner circumference while this key is pressed.
REC INPUT	Selects the mode for the pit and groove every time this key is pressed.
REC MODE	Selects the spindle servo mode. (CLV-S and CLV-A)
TITLE INPUT	Selects the contents of the display every time this key is pressed.

Note : An erasure prevention control is not detected in the test mode. Notice that recording is performed irrespective of the erasure prevention control position when the REC key is pressed.

4-6 Display in test mode

The display is selected in the order of MODE display, address display and error rate display every time the TITLE INPUT key is pressed.

1. MODE display

"TEMP ADJUST" and "CPLAY MODE" are displayed as the MODE display.

2. Error rate display

The error rare display appears as described below.

C1 = ##### AD = ##

C1 = C1 error, AD = ADIP error

3. Address display

The address display appears as described below.

h = #####, d = ####(Recordable groove and pre-mastered disc.)

h=Header address, d=ADIP address

* When no address can be read, " - " display appears.

4. Segment indication

[play] mark : servo on

[pause] mark : tracking servo on

[rec] mark : servo on (laser light power)

[SINGLE] : servo groove mode

[TOTAL] : servo mode (CLV-A)

[PGM] : spindle lock

[COPY] : recordable disc

CIRCUIT DESCRIPTION

4-7 Precaution on use of test mode

- ❖ An erasure prevention control is not detected in the test mode. Therefore, when the recording laser power mode such as continuous recording mode and traverse adjustment mode is entered, the contents of the existing recording are erased irrespective of the control position. Be careful not to enter the continuous recording mode and traverse adjustment mode when using a disc, containing the data that should not be erased, in the test mode.

5. Electrical adjustment

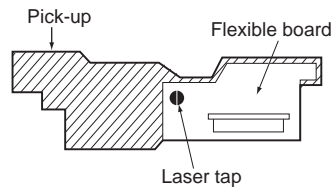
5-1 Precaution during confirmation of Laser Diode emission

During adjustment, do not view the emission of a laser diode from just above for confirmation. This may damage your eyes.

5-2 Precaution on handling of Optical pick-up (KMS-260A)

The laser diode in an optical pick-up is easy to be subject to electrostatic destruction. Therefore, solder-bridge the laser tap on the flexible board when handling the optical pick-up.

When removing the flexible board from the connector, make a solder bridge in advance, then remove the board. Be careful not to remove the solder bridge before inserting the connector. Moreover, take careful measures against electrostatic destruction. The flexible board is cut easily. Handle the flexible board with care.



5-3 Precaution during adjustment

- 1) Perform the adjustment and confirmation marked with "O" in the order shown in the table when the parts below are replaced.
- 2) In the test mode, perform the adjustment. After adjustment is completed, cancel the test mode.

	Optical pick-up	BD board		
		IC6	D101	IC1,IC2,IC10
1. Temperature compensation offset adjustment	X	O	O	O
2. Laser power adjustment	O	O	X	O
3. Traverse adjustment	O	O	X	O
4. Focus bias adjustment	O	O	X	O
5. Error rate confirmation	O	O	X	O

- 3) Perform the adjustment in the order described.
- 4) Use the following tools and measurement equipment.
 - CD test disc TGYS-1
 - Laser power meter
 - Oscilloscope (with bandwidth of more than 40 MΩ)
(Calibrate the probe before measurement.)
 - Digital voltmeter
 - Thermometer

- 5) Take care that VC and GND (ground) are not connected on the oscilloscope when two or more signals are monitored on the oscilloscope. (VC and GND are short-circuited in this case.)

Note : The "#" display on the screen indicates an arbitrary figure.

5-4 Creating the recordable continuous recording disc

This disc is used for focus bias adjustment and error rate confirmation. How to create the recordable continuous recording disc is described below.

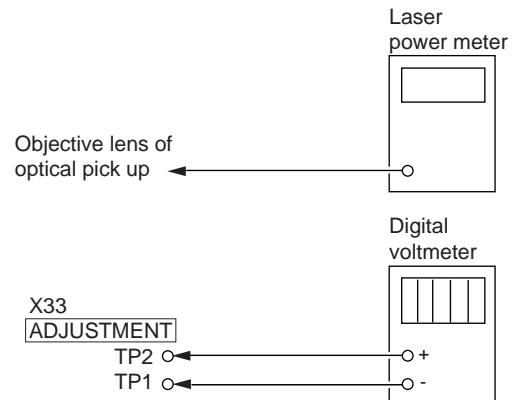
1. Insert a commercial recordable disc (blank disc).
2. Turn the JOG DIAL to display "CREC MODE."
3. Press the ENTER key to display "CREC IN".
4. Turn the JOG DIAL (CW) to display "CREC-MID".
5. After pressed the ENTER key, a display indicates "CREC(0300)" and the recording begins.
6. Terminate the recording within five minutes.
7. Press the DELETE key to stop the recording.
8. Press the EJECT key to take out the recordable disc.

As a result, a continuously recorded disc can be created for focus bias adjustment and error rate confirmation.

Note : Take care that no vibration is applied during continuous recording.

5-5 Laser power adjustment

Connection :



Adjustment :

1. Put the laser power meter on the objective lens of the optical pick-up. Connect the digital voltmeter to TP1 and TP2.
2. Turn the JOG DIAL to display "LDPWR ADJUST".
(Laser power : For adjustment use)
3. Press the ENTER key to display "(0.9mW)\$##".
4. Adjust to turn JOG DIAL so that the laser power meter reads 0.86 - 0.94mW.
Set range 10mW of the laser power meter, then save to press ENTER key.
5. "(7.0mW)\$##" is displayed.
6. Adjust to turn the JOG DIAL so that laser power meter reads 6.9-7.1mW, then save to press ENTER key.
("LDPWR<\$##" is displayed momentarily.)

CIRCUIT DESCRIPTION

- ❖ Don't output the laser power of 7.0mW more than 15sec.
- 7. Next turn the JOG DIAL to display "LDPWR CHECK".
- 8. Press ENTER key to display "(0.9mW)\$##". Check the laser power meter reads 0.85-0.95mW.
- 9. Next set range 10mW of the laser power meter, then press ENTER key to display "(7.0mW)\$##". Confirm that the laser power meter and digital voltmeter at that time read the specified value.

Specification :

Reading of laser power meter : 7.0 ± 0.1 mW

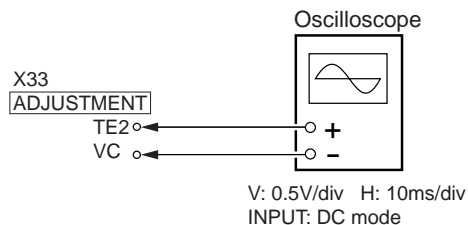
Reading of digital voltmeter : Optical pick-up indication value $\pm 10\%$ (optical pick-up label)



In this case, $lop = 82.5$ mA
 $lop(mA) = \text{Reading of digital voltmeter}(mV)/1(\Omega)$

- 10. Press the ENTER key to display "LDPWR CHECK" and stop the laser emission. (The DELETE key can be pressed at any time to stop the laser emission.)

Note : The "\$#" display on the screen indicates an arbitrary figure.

5-6. Traverse Adjustment**Connection :****Adjustment :**

- 1. Connect the oscilloscope to (TE2) and (VC) on the X33 board.
- 2. Insert a commercial recordable disc.
- 3. Turn the JOG DIAL to display "EFBAL ADJUST".
- 4. Press the ENTER key to display "EFBAL MO-W" and after that press the ENTER key again to display "EF=\$##MOW".
- 5. Turn the JOG DIAL so that the waveform on the oscilloscope satisfies the specified value. (When the JOG DIAL is turned, the #-marked figure in "EF=\$##" changes and the waveform also changes.) During this adjustment, the oscilloscope changes in units of about 3%. Adjust so that the waveform comes nearest to the specified value. (MO groove read power traverse adjustment)

(Traverse waveform)



Specification : A = B

- 6. Press the ENTER key to display "EFB=##XSAVE" momentarily. After that, "EF=\$##MOR" is displayed. (Laser power READ power, focus servo ON, tracking servo OFF, and spindle(S) servo ON.)
- 7. Turn the JOG DIAL so that the waveform on the oscilloscope satisfies the specified value. (When the JOG DIAL is turned, the #-marked figure in "EF=##" changes and the waveform also changes.) During this adjustment, the oscilloscope changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value. (MO groove read power traverse adjustment)

(Traverse waveform)



Specification : A = B

- 8. Press the ENTER key to display "EFB=##XSAVE" momentarily and save the adjustment result in non-volatile memory. After that, "EFBAL MO-P" is displayed.
- 9. Press ENTER key to display "EF=\$##MOP". (A pick-up moves automatically to pit block area.)
- 10. Turn the JOG DIAL so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)



Specification : A = B

- 11. Press the ENTER key to display "EFB=##XSAVE" momentarily and save the adjustment result in non-volatile memory. After that, "EFBAL CHANGE" is displayed. The disc rotation stops automatically.

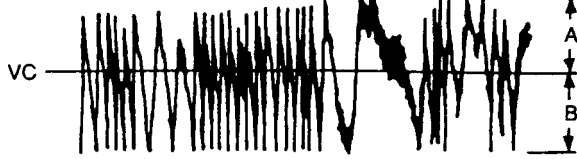
Note : The "\$#" display on the screen indicates an arbitrary figure.

- 12. Press the EJECT key to take out a recordable disc.
- 13. Insert test disc TGYS-1.
- 14. Press the ENTER key to display "EF=\$##CD". A servo is established automatically.
- 15. Turn the JOG DIAL so that the waveform on the oscilloscope comes near to the specified value. During this adjustment, the waveform changes in units of about 2%. Adjust so that the waveform comes nearest to the specified value.

(Traverse waveform)

CIRCUIT DESCRIPTION

(Traverse waveform)

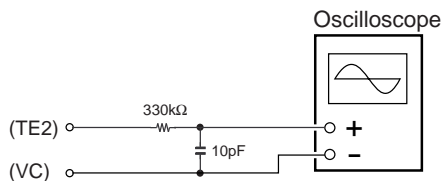


Specification : A = B

16. Press the ENTER key to display "EFB=##XSAVE" momentarily and save the adjustment result in non-volatile memory. After that, "EFBAL ADJUST" is displayed.
17. Press the EJECT key to take out test disc TGYS-1.

Notes :

1. Data is erased during MO write when a recorded disc is used for this adjustment.
2. If the traverse waveform is difficult to be monitored, connect an oscilloscope as shown in the figure below.

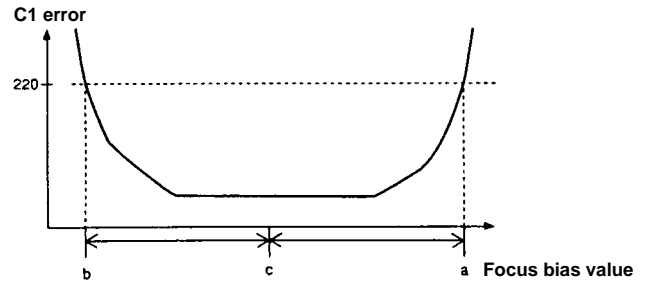
**5-7 Focus bias adjustment****Connection :**

1. Insert a continuously recorded disc (refer to 5-4, "Creating the recordable continuous recording disc").
2. Turn the JOG DIAL to display "CPLAY MODE".
3. Press the ENTER key to display "CPLAY MID".
4. Press the DELETE key when "C=#### a=##" is displayed.
5. Turn the JOG DIAL to display "FBIAS ADJUST".
6. Press the ENTER key to display "a=## ####/##". The middle four-digit figure indicates the C1 error rate, the two-digit figure after "/##" indicates ADIP error, and the two-digit figure after "a=" indicates the focus bias value.
7. Turn the JOG DIAL clockwise and detect the focus bias value in which the C1 error rate becomes 220.
8. Press the ENTER key to display "b=## ####/##".
9. Turn the JOG DIAL counterclockwise and detect the focus bias value in which the C1 error rate becomes 220.
10. Press the ENTER key to display "C=## ####/##".
11. Confirm that the C1 error rate at that time is less than 50, then press the ENTER key.
12. The display appears "##-##-##(##)" momentarily and save the adjustment result in nonvolatile memory. After that "FBIAS ADJUST" is displayed.
13. Press the EJECT key to take out a continuous recording disc.

Notes :

1. The relation between the C1 error and focus bias value is shown in the figure below. Points "a" and "b" in the figure are detected by the above adjustment. Focal position "C" is automatically obtained from points "a" and "b" by calculation.

2. The C1 error rate fluctuates. Therefore, perform the adjustment according to the observed mean value.

**5-8 Error rate confirmation****5-8-1 CD error rate confirmation****Confirmation :**

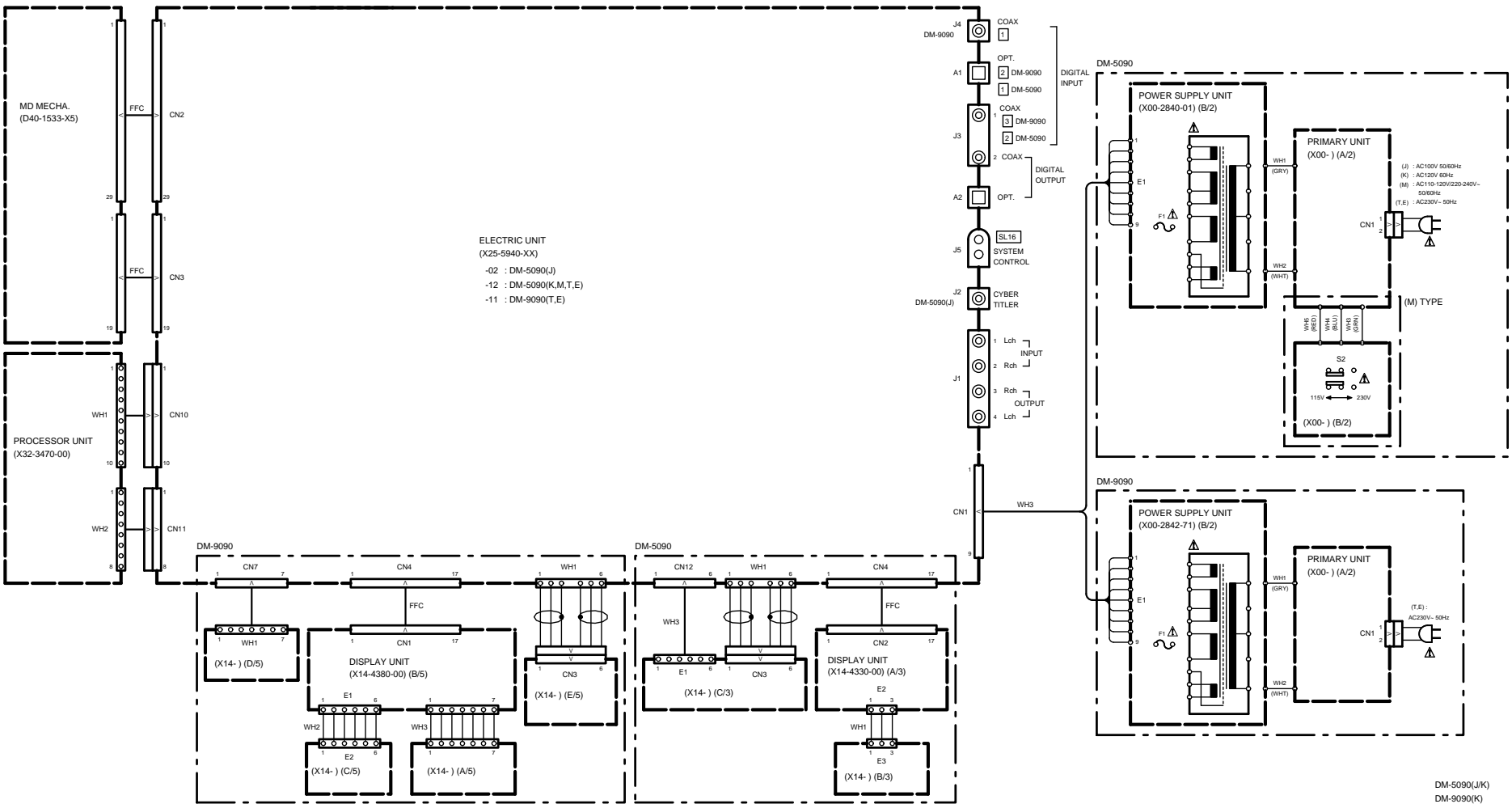
1. Insert test disc TGYS-1.
2. Turn the JOG DIAL to display "CPLAY MODE".
3. Press the ENTER key to display "CPLAY MID".
4. "C=#### a=##" is displayed.
5. Confirm that the C1 error rate is less than 20.
6. Press the DELETE key to stop the playback, then press the EJECT key to take out a test disc.

5-8-2 MO error rate confirmation

1. Insert a continuously recorded disc (refer to 5-4, "Creating the recordable continuous recording disc").
2. Turn the JOG DIAL to display "CPLAY MODE".
3. Press the ENTER key to display "CPLAY MID".
4. "C=#### a=##" is displayed.
5. Confirm that the C1 error rate is less than 50 and that ADIP error rate is 00.
6. Press the DELETE key to stop the playback, then press the EJECT key to take out a test disc.

Note : The "#" display on the screen indicates an arbitrary figure.

WIRING DIAGRAM

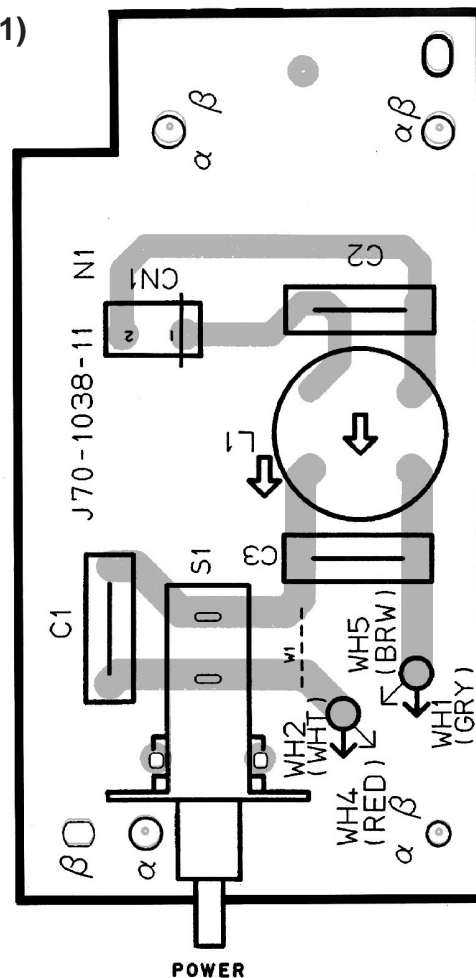


1
2
3
4
5
6
7

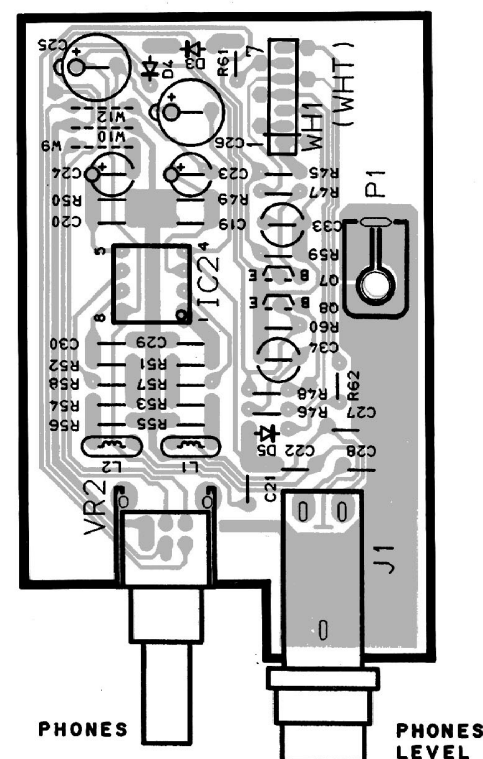
Refer to the schematic diagram for the value of resistors and capacitors.

PC BOARD(Component side view)

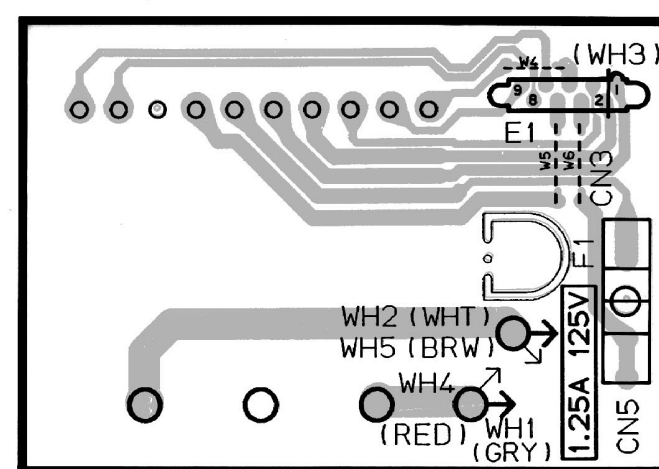
Power supply unit (X00-2840-00) (A/2)
(X00-2840-51)



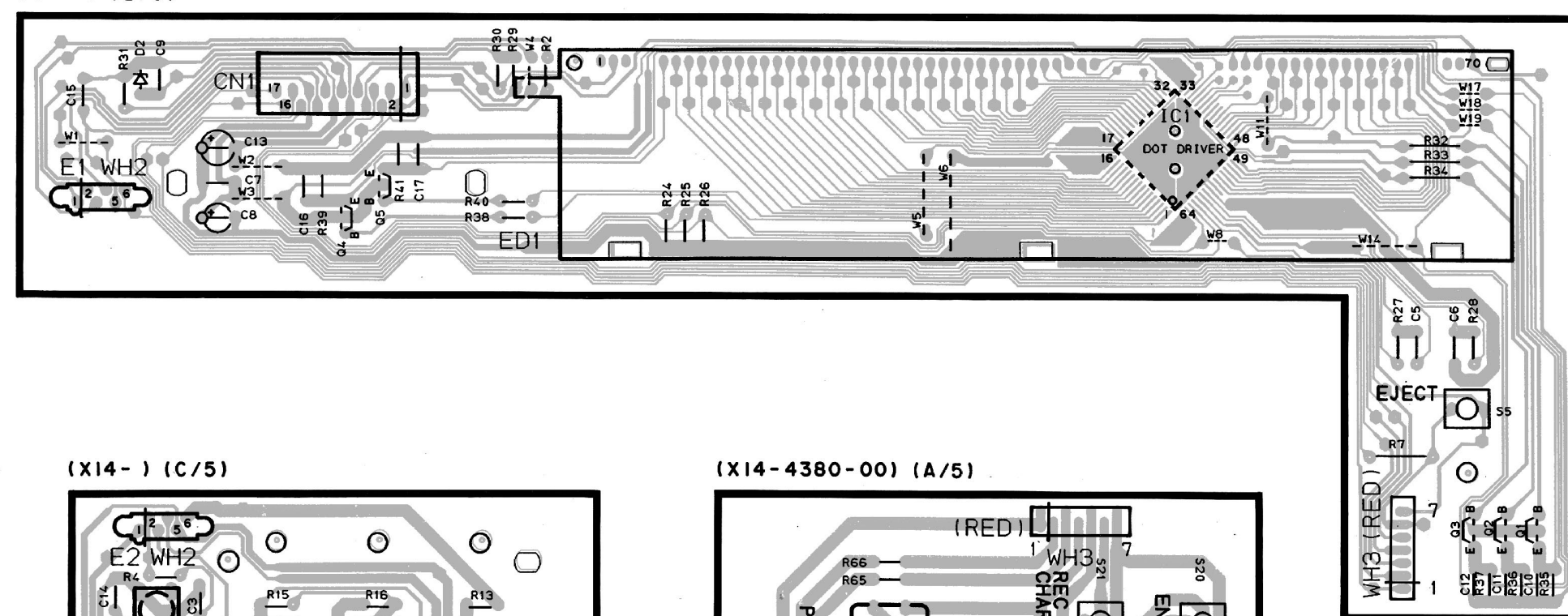
(X14-) (D/5)



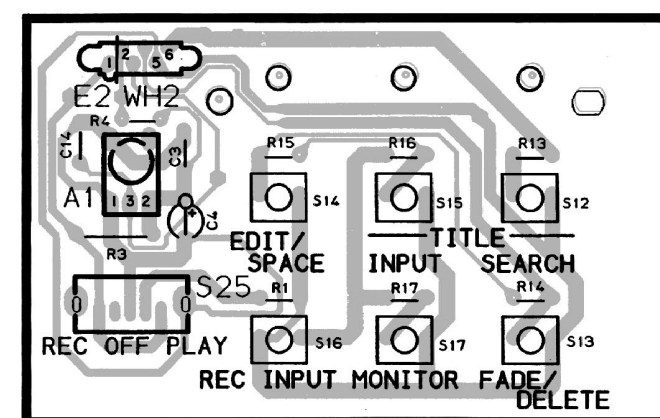
(X00-) (B/2)



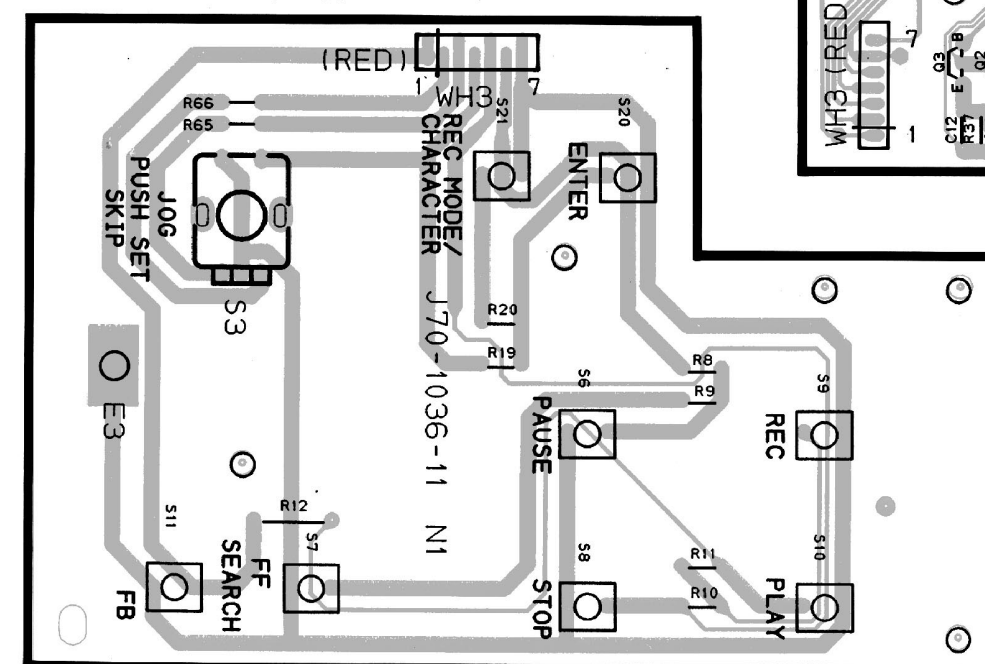
Display unit (X14-4380-00)
(X14-) (B/5)



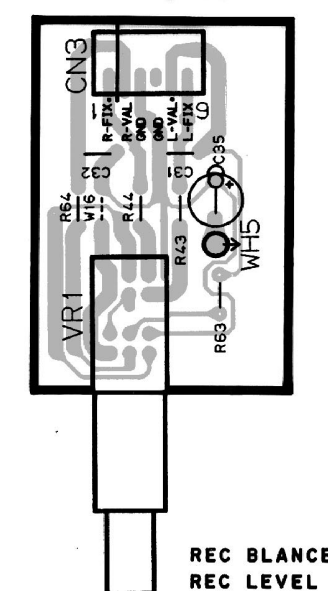
(X14-) (C/5)



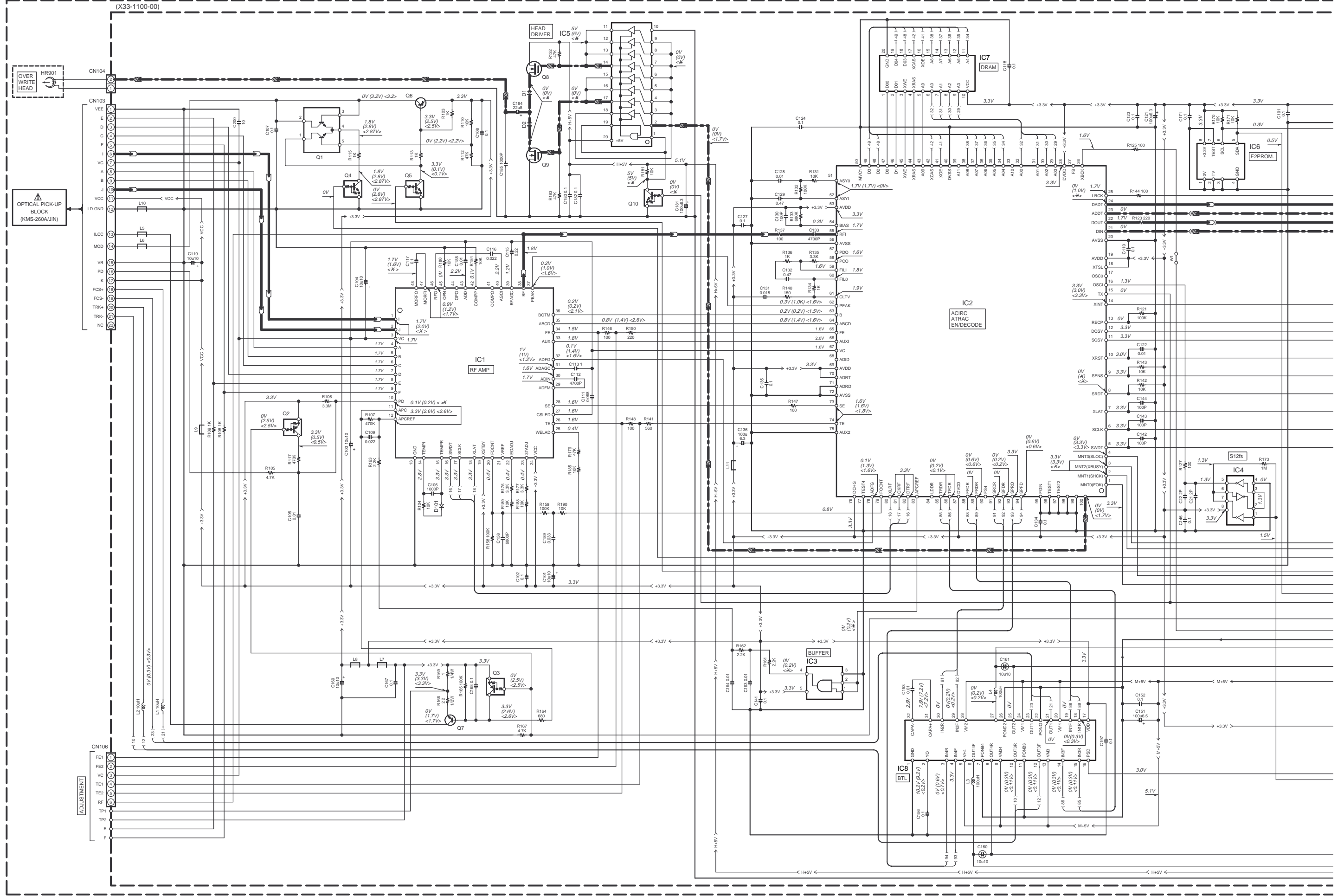
(X14-4380-00) (A/5)

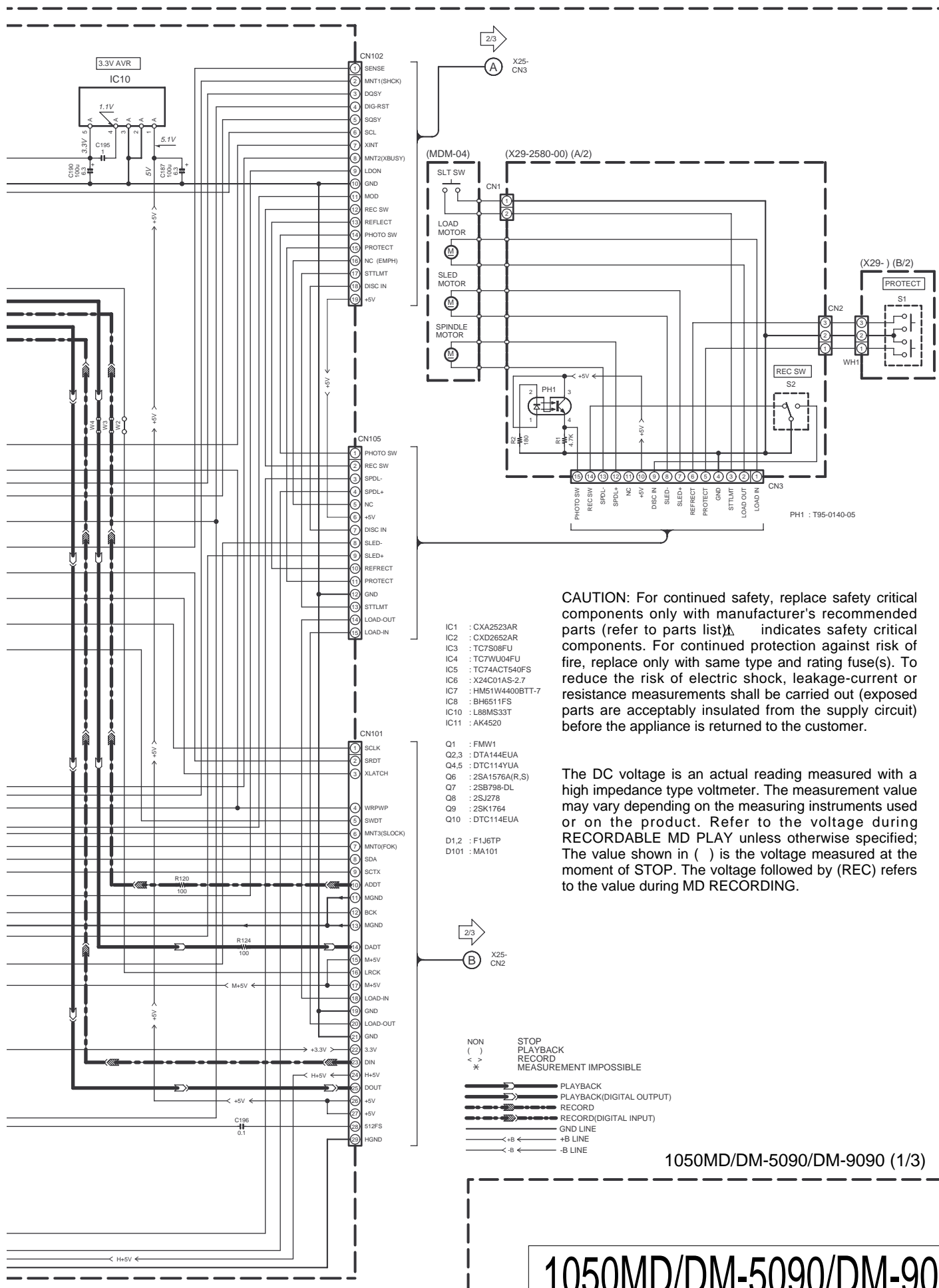


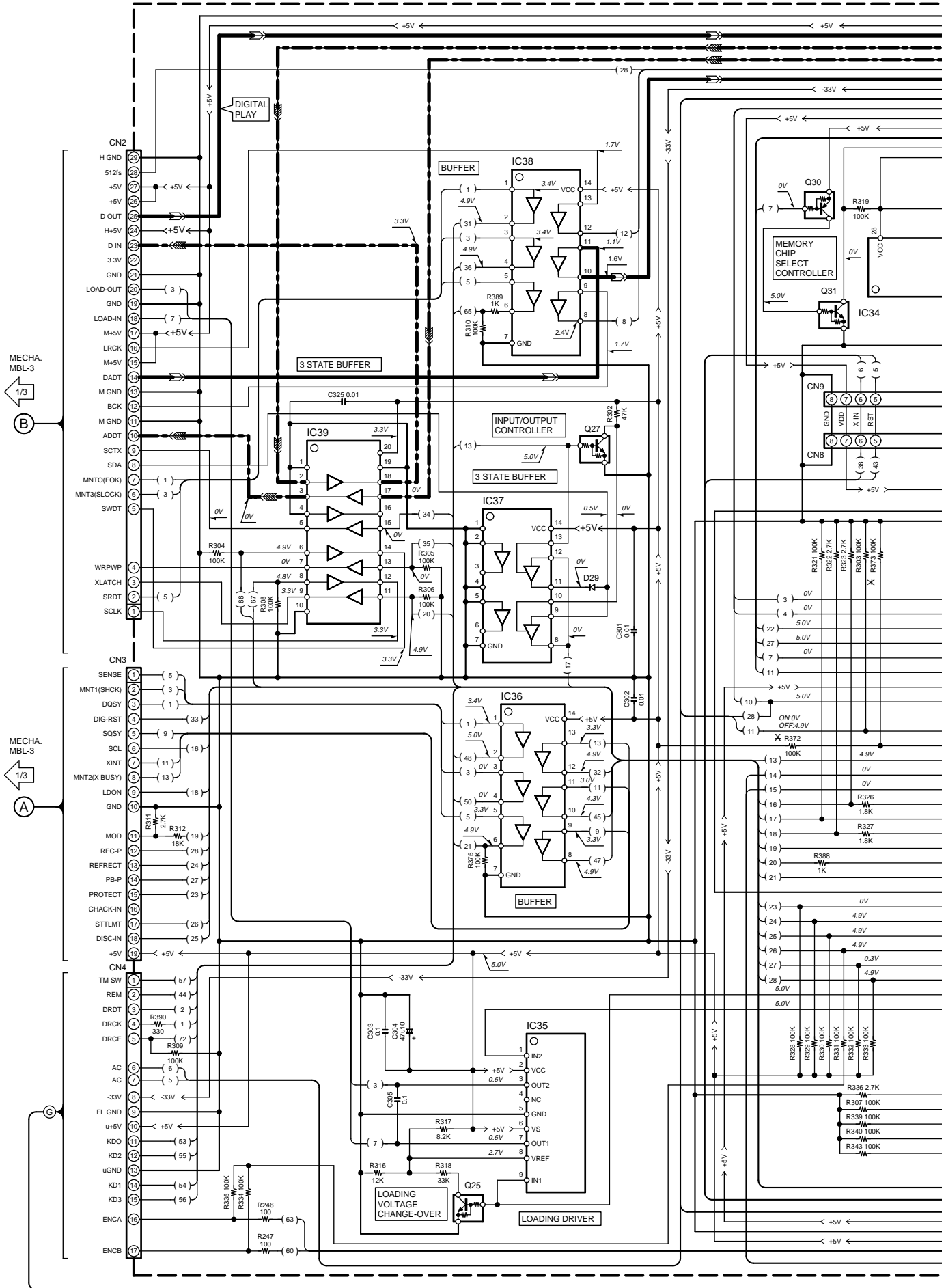
(X14-) (E/5)

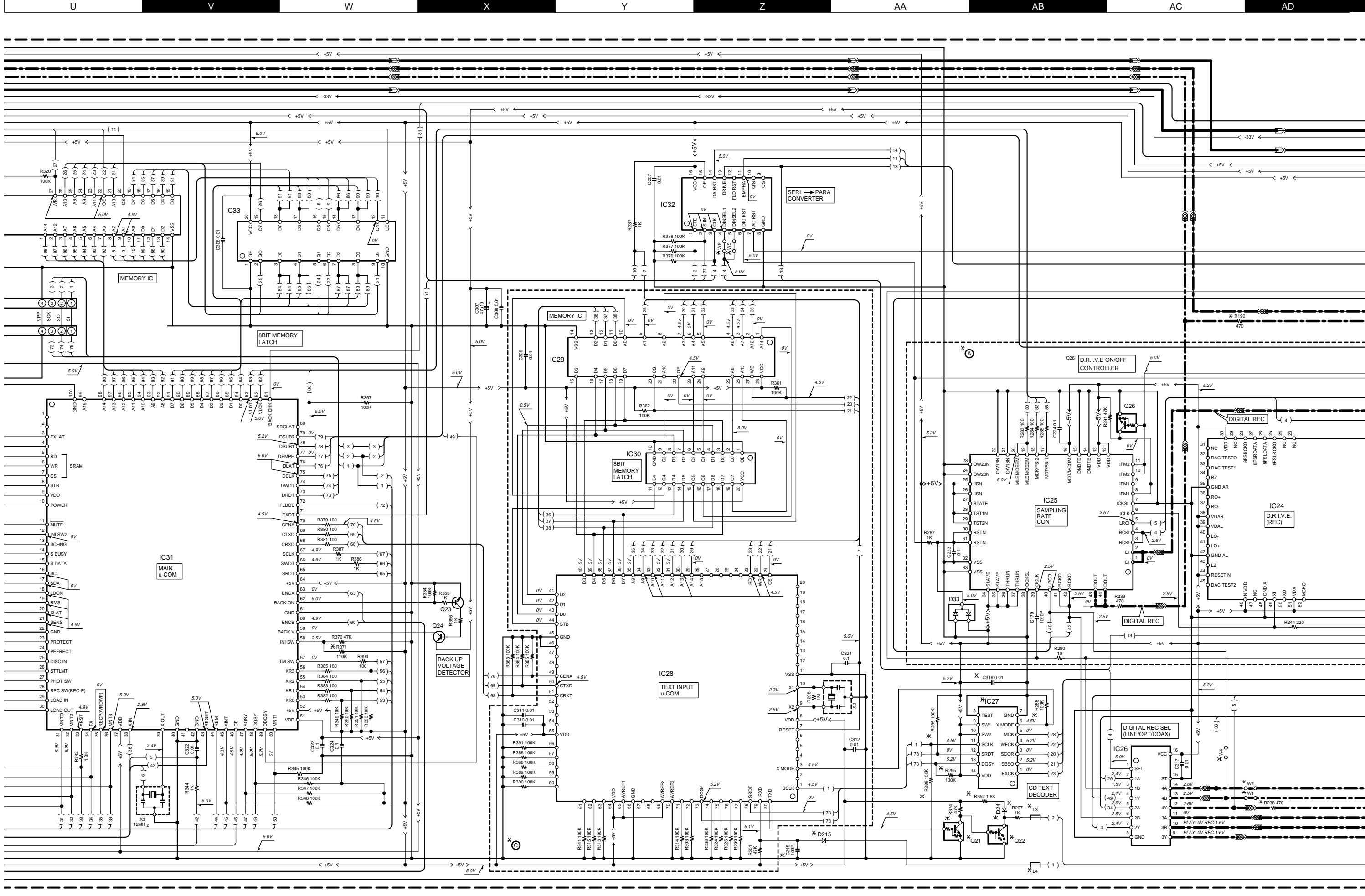


REC BLANCE
REC LEVEL



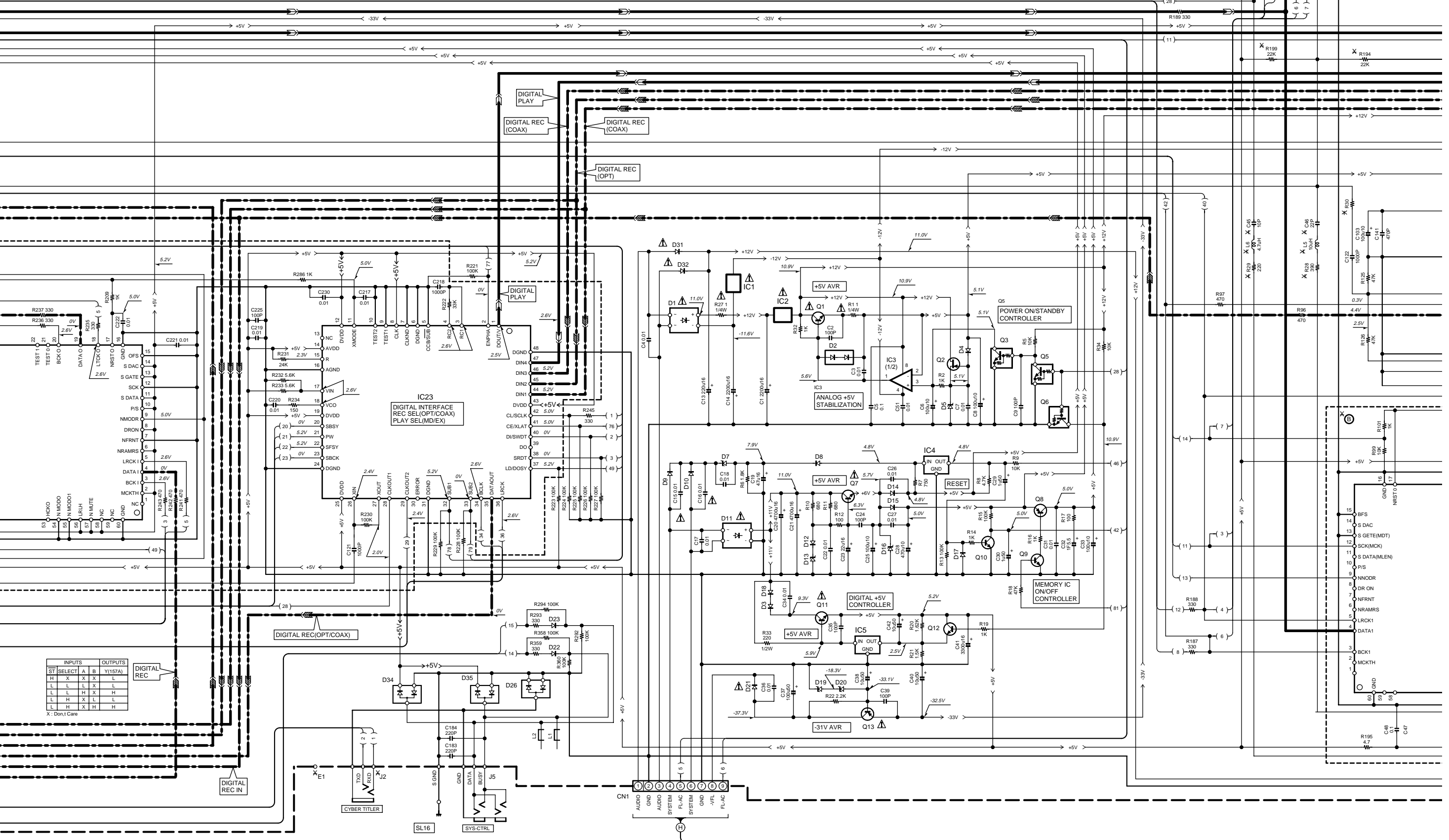


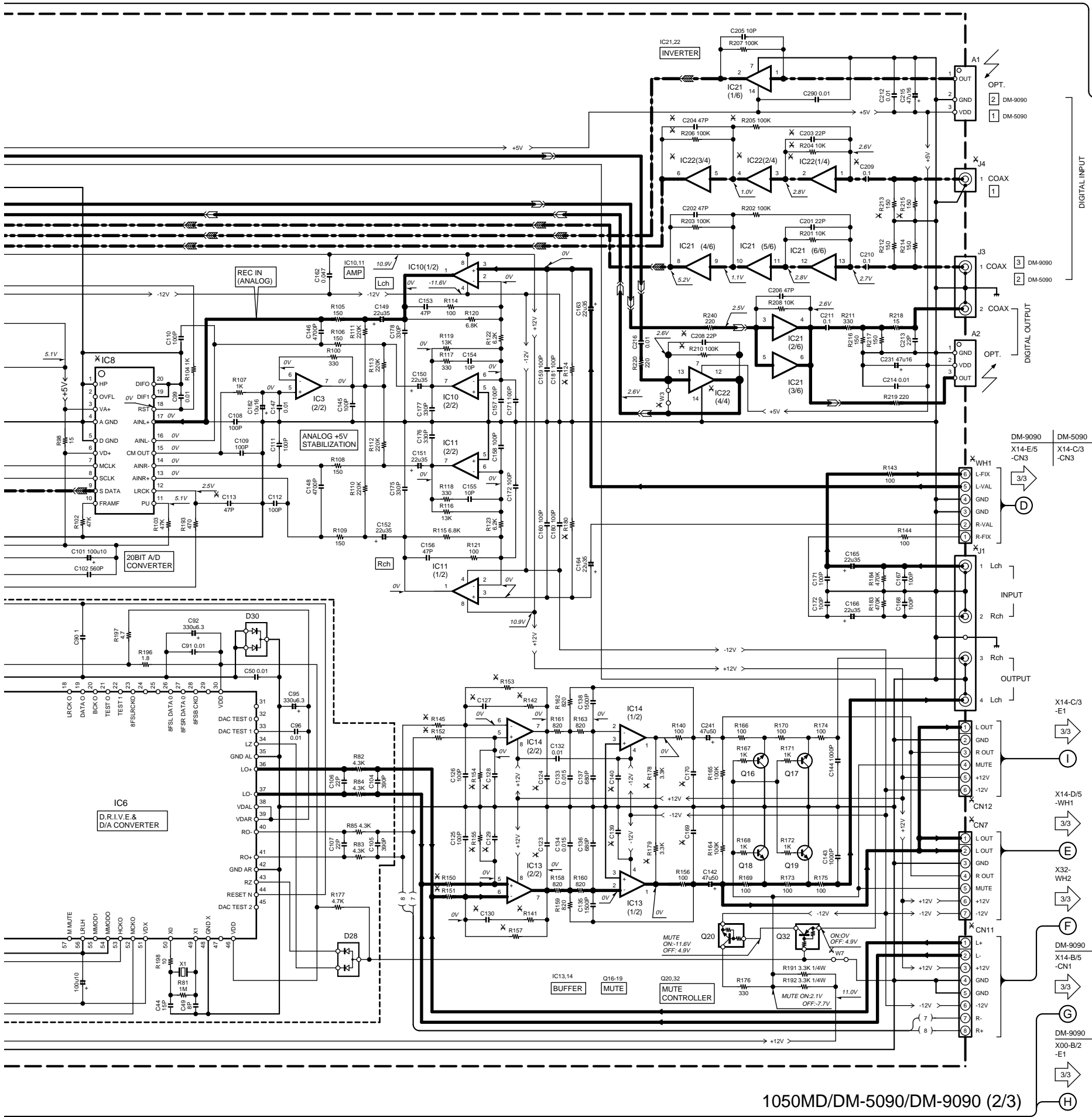
ELECTRIC UNIT
(X25-594X-XX)



CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

The DC voltage is an actual reading measured with a high impedance type voltmeter. The measurement value may vary depending on the measuring instruments used or on the product. Refer to the voltage during RECORDABLE MD PLAY unless otherwise specified; The value shown in () is the voltage measured at the moment of STOP. The voltage followed by (REC) refers to the value during MD RECORDING.





1050MD/DM-5090/DM-9090 (2/3)

2SA954

2SC2458

DTA144EUA
DTC114YUA
DTC143TUA
UN5216
UN5219
2SC4081

2SB798-DL

DM-9090 (X25-5940-11)

DESTINATION	UNIT No.	A	B	C	C45,46, 113,315,	C123,124, 169,170	C127- 130	C139, 140	C203,204,208, 209,316	CN7, 10,11	CN12	D24, 215
COUNTRY	ABB											
U.K.	T	0-01	YES	NO	NO	330P	1500P	120P	YES	YES	NO	NO
EUROPE	E											

UNIT No.	E1	IC8	IC22, 27	J1	J2	J3	J4	L3, -6	Q21, 22	R28,29,190,238, 297,352,373,374	R30	R124, 180
0-01	YES	CS5335	YES	E63-0121-05	NO	E63-0174-05	YES	NO	NO	NO	330	330K

UNIT No.	R141, 142	R145, 150-152	R153- R155,157	R178,179,194,199,204-206,210, 213,215,288,289,295,296,372	R371	W1- 3,5	W4, 6,7	WH1
0-01	100	4.7K	1.5K	YES	110K	NO	YES	E35-1974-05

DM-5090 (X25-594X-XX)

DESTINATION	UNIT No.	A	B	C	C45,46, 113	C123,124,139, 140,169,170,	C127- 130	C203,204,208, 209,316	C315	CN7, 10,11	CN12	D24, 215
COUNTRY	ABB											
JAPAN	J	0-02	YES	YES	YES	100P	180P	NO	YES	NO	YES	NO
U.S.A.	K											
GENERAL MARKET	M	0-12	NO	YES	NO	100P	180P	NO	YES	NO	YES	NO
U.K.	T											
EUROPE	E											

UNIT No.	E1	IC8	IC22, 27	J1	J2	J3	J4	L3,4	L5,6	Q21, 22	R28,29, 190,238	R30	R124, 180	R141, 142
0-02	NO	CS5334	NO	E63-0120-05	YES	E63-0160-05	NO	NO	YES	YES	YES	10	56K	330
0-12	NO	CS5334	NO	E63-0120-05	NO	E63-0160-05	NO	NO	YES	NO	YES	10	56K	330

UNIT No.	R145, 150-152	R153- R155,157	R178,179,194,199,204-206,210,213,215,371	R288,289,295- 297,352,373,374	R372	W1- 3,5	W4, 6,7	WH1
0-02	3.9K	18K	NO	YES	NO	YES	NO	E35-2021-05
0-12	3.9K	18K	NO	NO	YES	YES	NO	E35-2021-05

- IC1,2 : ICP-N10
- IC3 : NJM4558M
- IC4 : PST993D-T
- IC5 : TL431CLP
- IC6,24 : KAN03
- IC8 : CS5334
- IC10,11,13,14 : NJM4580ED
- IC21,22 : TC74HCU04AF
- IC23 : LC8904Q
- IC25 : SM5844AF
- IC26 : TC74HC157AF
- IC27 : LC89170M
- IC28 : uPD784035GC801
- IC29,34 : HM62256BLFP-8T or HM62256BLFP-7T or HM62256BLFP12T
- IC30,33 : TC74HC373AF
- IC31 : UPD784215GF508 or UPD78F4216GF
- IC32 : TC74HC4094AF
- IC35 : TA8409S
- IC36,38 : TC74HCT7007AF
- IC37 : HD74HCT126FPEL
- IC39 : TC74VHC244F
- Q1,7,11 : 2SD2061 or 2SD2012
- Q2 : 2SK246(Y,GR)
- Q3 : UN5219
- Q5,6,20-22,25-27 : UN5212
- Q8,24 : 2SA1576A(R,S)
- Q9,10,12,23 : 2SC4081(R,S)
- Q13 : 2SC954(L,K)
- Q16-19 : 2SD1450(S,T)
- Q30,32 : UN5112
- Q31 : UN5216 or DTC143TUA
- D1,11 : D3SBA20F03
- D2,26,30,33-35 : DA204U
- D3,18 : U1BC44
- D4,8,12,17,22-24,29,31,32,215 : MA111
- D5 : UDZ5.1B
- D7 : UDZ2.7B
- D9,10,21 : S5688B(TPB5)
- D13 : UDZ5.6B
- D14,15 : MA113
- D16 : UDZ6.2B
- D19 : UDZ18B
- D20 : UDZ15B
- D28 : DAP202U

2SD2012

NJM4580E

TA8409S

NJM4580D

NJM4558M
NJM4580ED

TC74HC4094AF

DAP202U
DA204U

UN5212

2SK246

HM62256BLFP12T

TC74HCT7007AF
TC74HCU04AF
TC74VHC04F

- DIGITAL RECORD LINE (DIGITAL INPUT)
- DIGITAL PLAYBACK LINE (DIGITAL OUTPUT)
- DIGITAL LINE
- GND LINE
- +B LINE
- B LINE

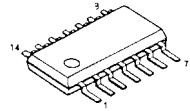
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ indicates safety critical components. For continued protection against risk of fire, replace only with same type and rating fuse(s). To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

The DC voltage is an actual reading measured with a high impedance type voltmeter. The measurement value may vary depending on the measuring instruments used or on the product. Refer to the voltage during RECORDABLE MD PLAY unless otherwise specified; The value shown in () is the voltage measured at the moment of STOP. The voltage followed by (REC) refers to the value during MD RECORDING.

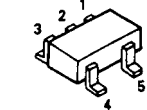
IC2 : ICP-N10
IC4 : SM5843AP
IC5 : KAN03
IC7-14 : TC74AC74F
IC15,16,31-34 : NJM4580E
IC24 : TC74VHCU04F
Q31 : 2SK246(Y,GR)
D32 : UD25.1B
D36,37 : 1SS133 or HSS104

— SIGNAL LINE
— GND LINE
— +B LINE
— -B LINE

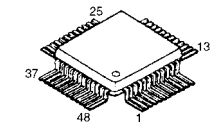
LC89170M



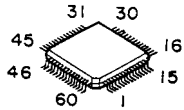
TC7S08FU



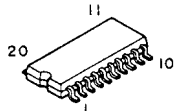
CXA2523AR
LC8904Q



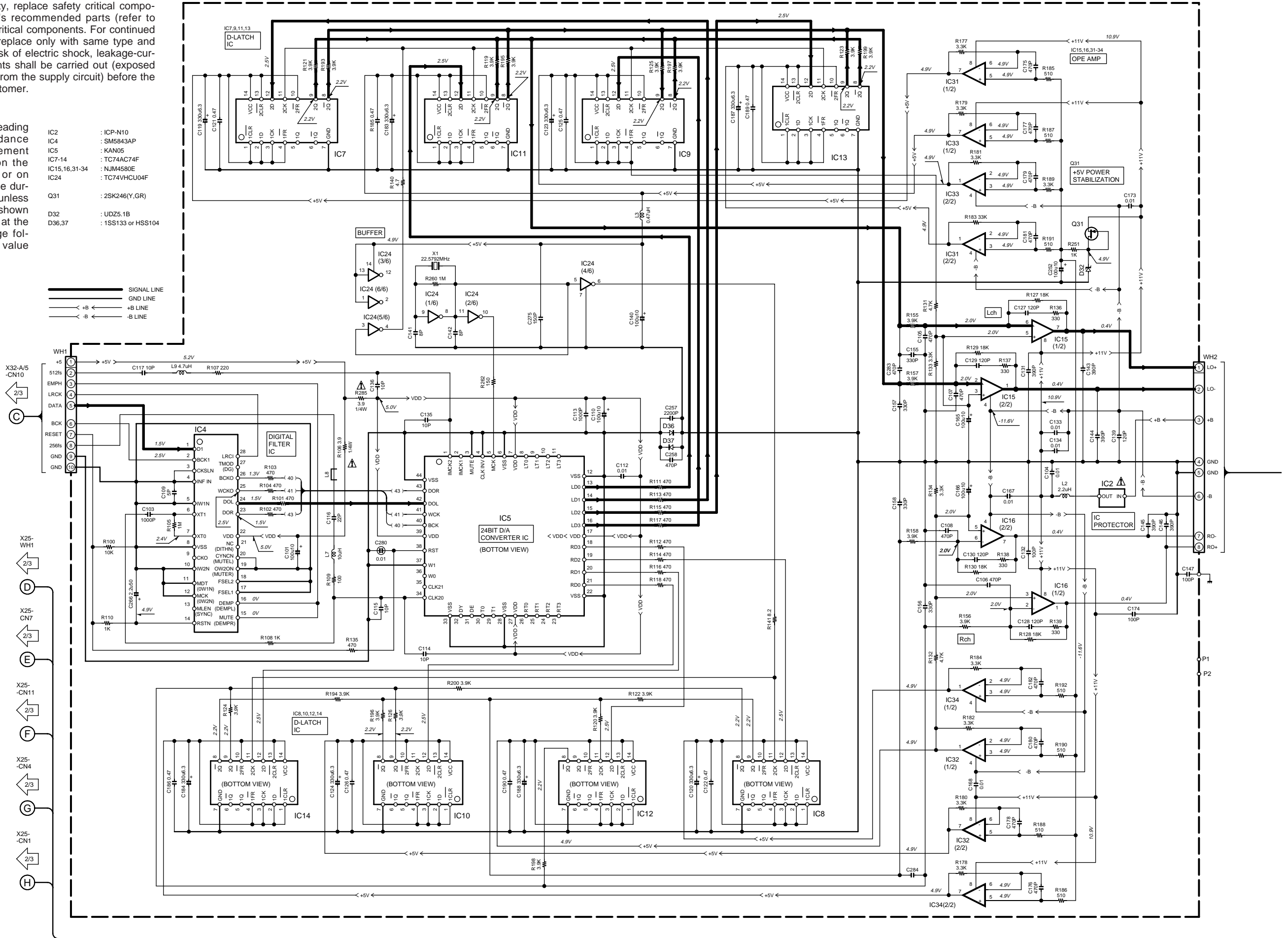
KAN03



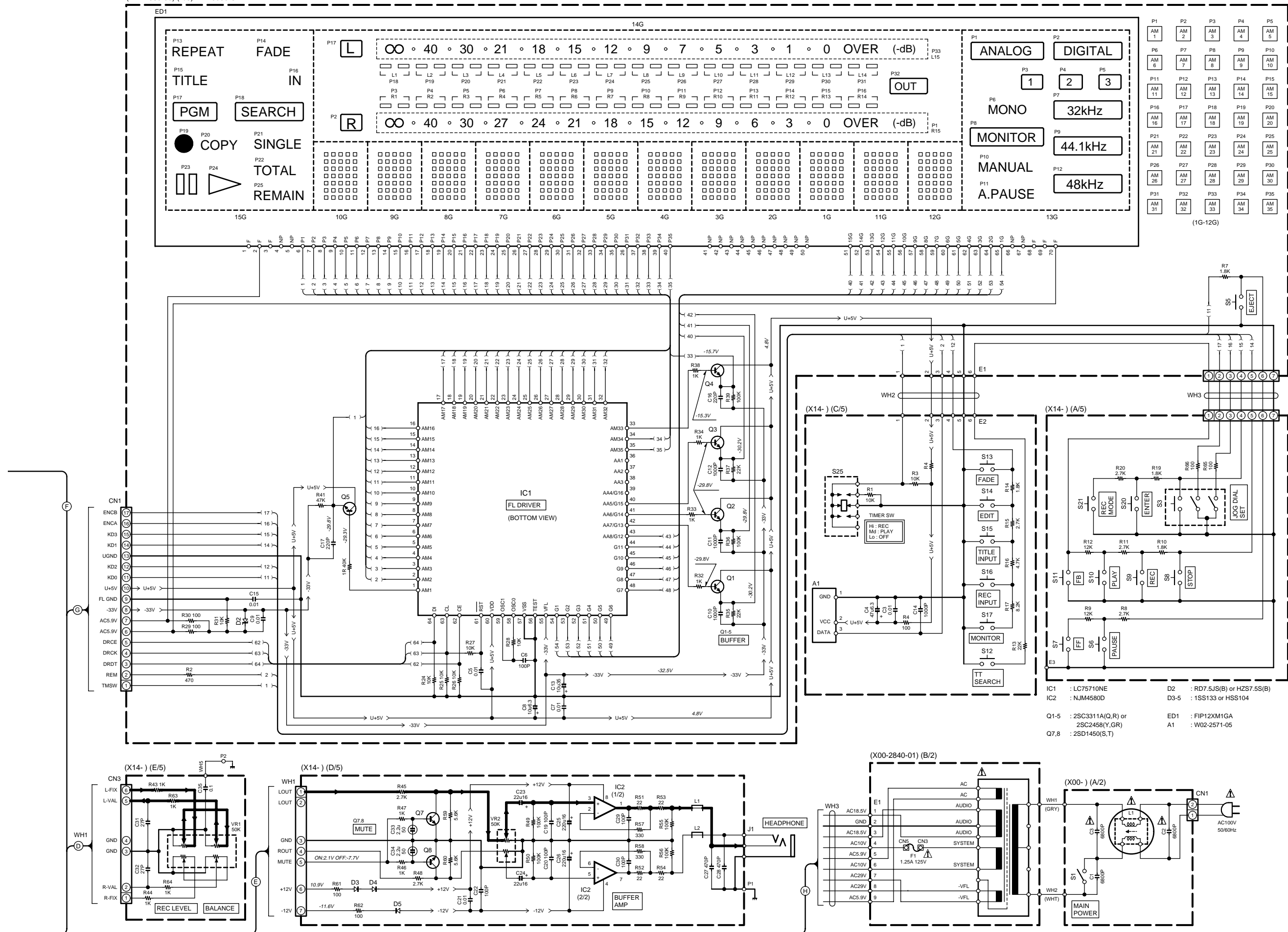
TC74HC373AF
TC74VHC244F



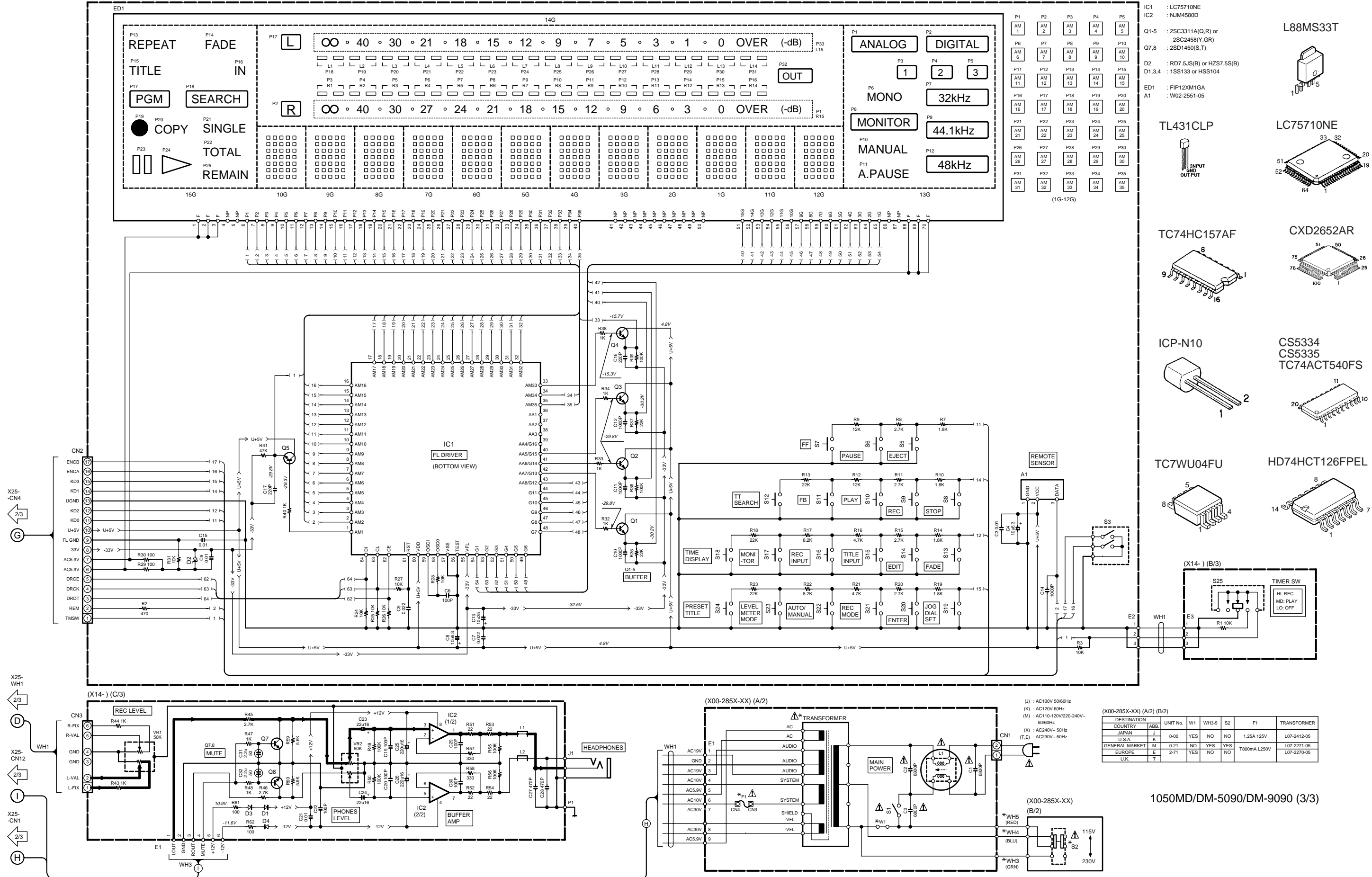
PROCESSOR UNIT
(X32-3470-00): DM-9090 ONLY



DISPLAY UNIT
(X14-4380-00) (B/5): DM-9090 ONLY



DISPLAY UNIT (X14-4430-00) (A/3) : DM-5090 ONLY



Y22-7000-00

KENWOOD

1050MD/DM-5090/DM-9090

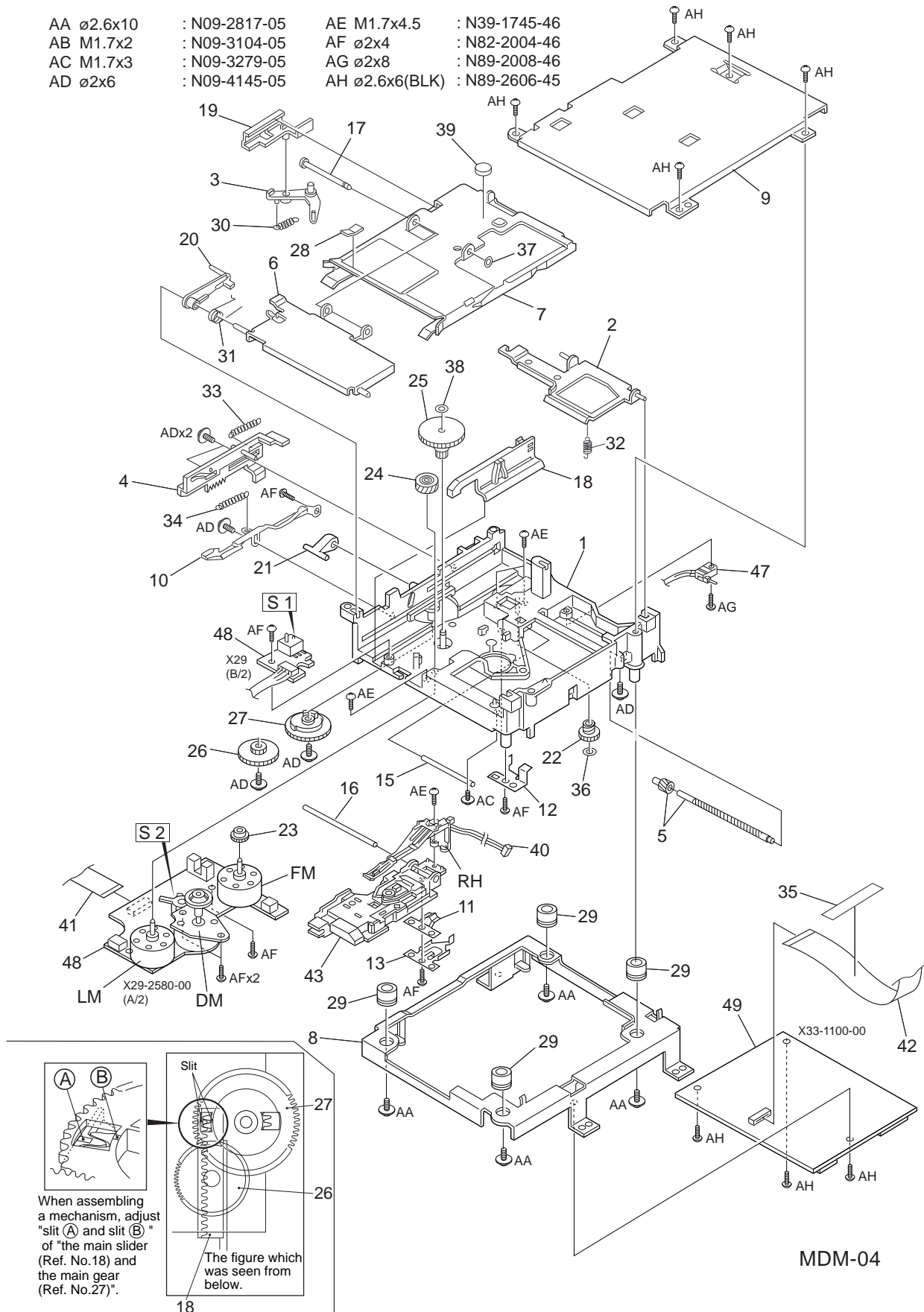
EXPLODED VIEW (MECHANISM)

AA $\varnothing 2.6 \times 10$
 AB M1.7x2
 AC M1.7x3
 AD $\varnothing 2 \times 6$

: N09-2817-05
 : N09-3104-05
 : N09-3279-05
 : N09-4145-05

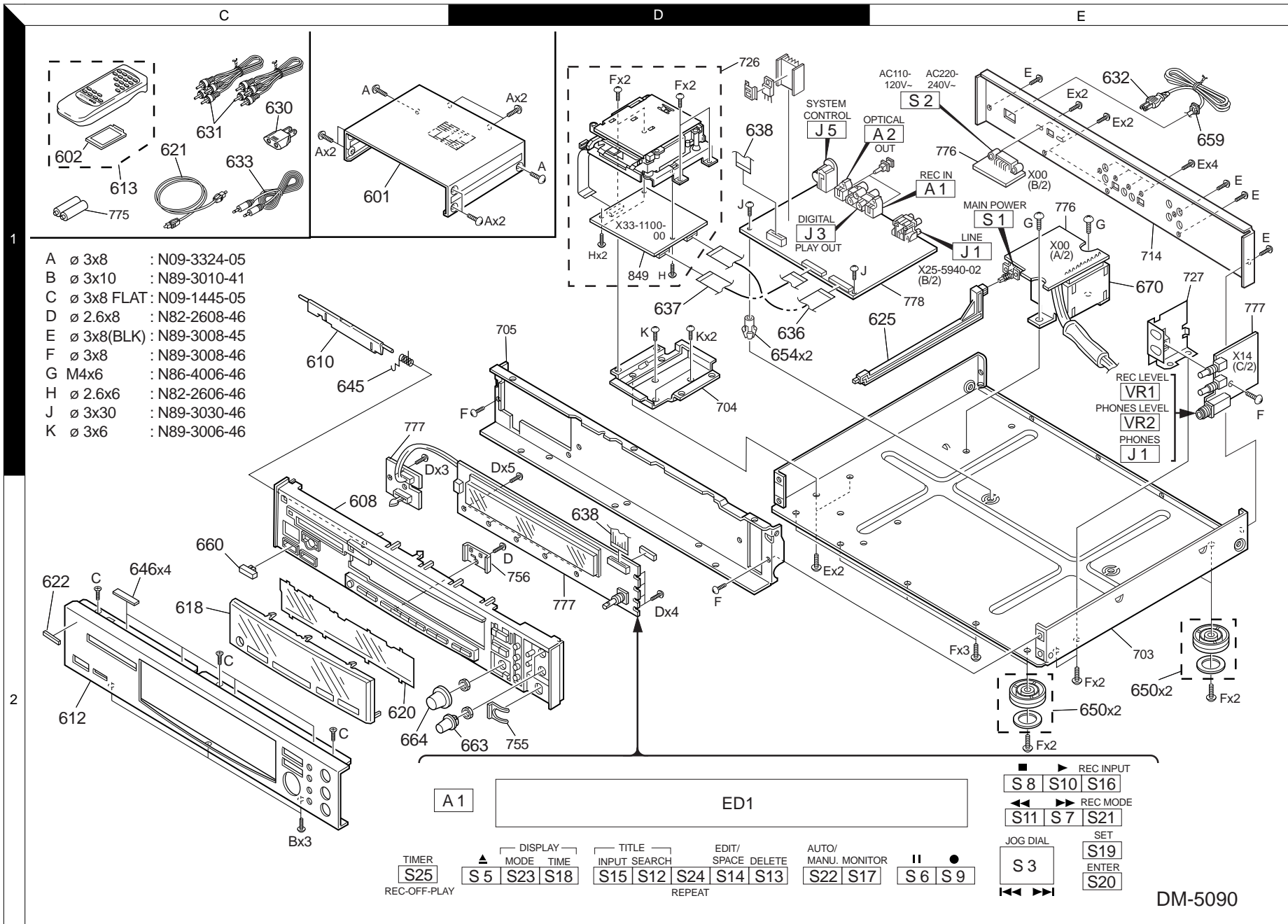
AE M1.7x4.5
 AF $\varnothing 2 \times 4$
 AG $\varnothing 2 \times 8$
 AH $\varnothing 2.6 \times 6$ (BLK)

: N39-1745-46
 : N82-2004-46
 : N89-2008-46
 : N89-2606-45



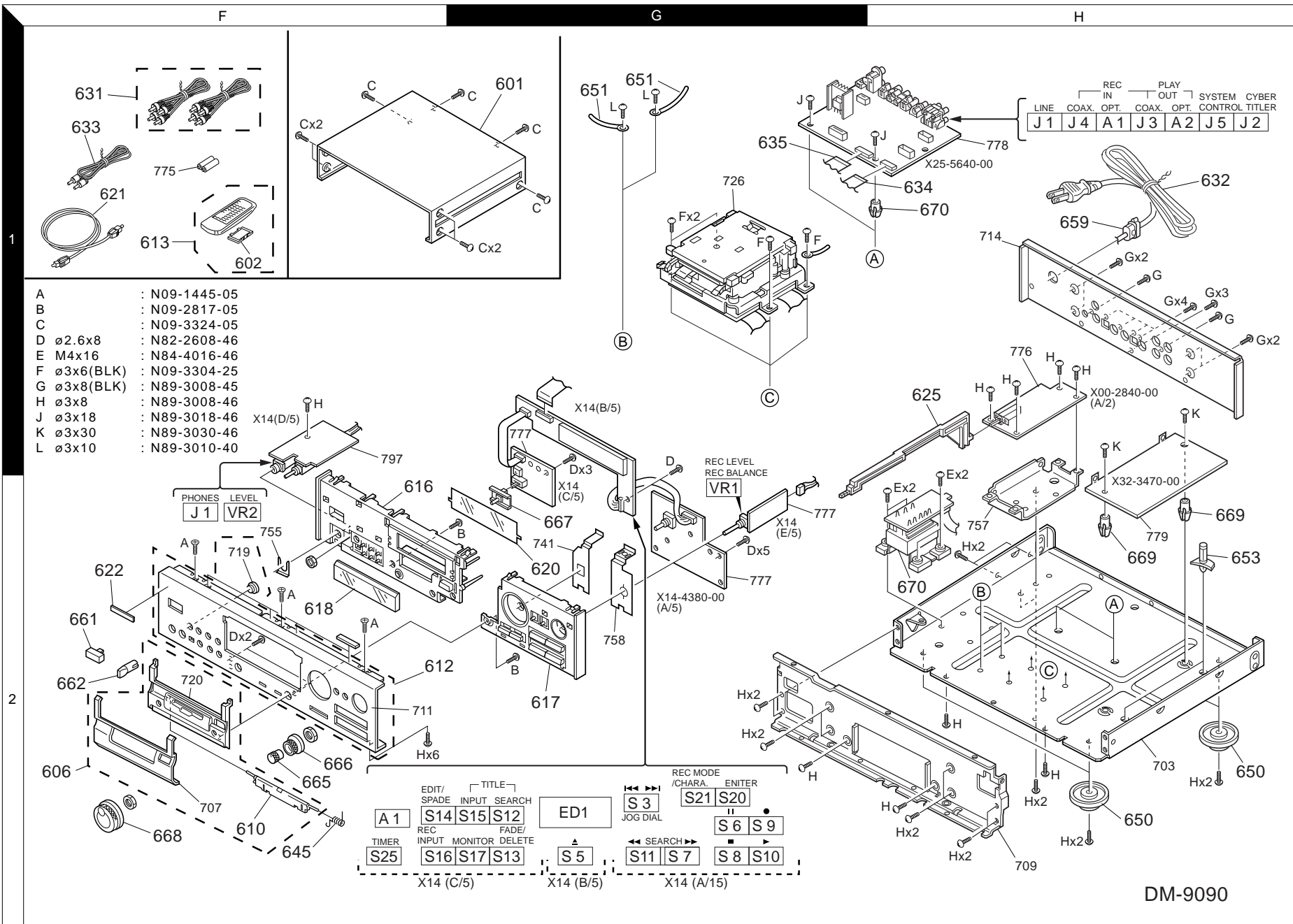
EXPLODED VIEW (UNIT)

Parts with exploded numbers larger than 700 are not supplied.



EXPLODED VIEW (UNIT)

1050MD/DM-5090/DM-9090



* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

1

Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
1050MD/DM-5090 T2: GOLD						
601	1C	*	A01-3342-11	METALLIC CABINET	T2	
601	1C		A01-3369-01	METALLIC CABINET	KMTE	
602	1C		A09-0362-08	BATTERY COVER		
608	2C	*	A22-1743-31	SUB PANEL	T2	
608	2C	*	A22-1747-31	SUB PANEL	KMTE	
610	1C	*	A29-0866-24	PANEL	T2	
610	1C	*	A29-0868-24	PANEL	KMTE	
612	2C	*	A60-1180-02	PANEL	T2	
612	2C	*	A60-1181-02	PANEL	K	
612	2C	*	A60-1182-02	PANEL	MTE	
613	1C		A70-1141-05	REMOTE CONTROLLER ASSY		
618	2C	*	B10-2376-03	FRONT GLASS	T2	
618	2C	*	B10-2377-03	FRONT GLASS	KMTE	
620	2C		B11-0336-13	COLOR FILTER	KMTE	
621			B11-0337-13	COLOR FILTER	T2	
621	1C		B19-1529-05	OPTICAL FIBER		
622	1C		B43-0302-04	KENWOOD BADGE	KMTE	
622	1C		B43-0305-04	KENWOOD BADGE	T2	
-			B46-0310-03	WARRANTY CARD	TE	
-			B46-0328-03	WARRANTY CARD	K	
-			B46-0336-03	WARRANTY CARD	K	
-			B58-0945-03	CAUTION CARD	TT2	
-		*	B60-3497-00	INSTRUCTION MANUAL(ENGLISH)	MTT2	
-		*	B60-3498-00	INSTRUCTION MANUAL(FRN/ITALY)	E	
-		*	B60-3499-00	INSTRUCTION MANUAL(GER/DUTCH)	E	
-		*	B60-3500-00	INSTRUCTION MANUAL(SPANISH)	ME	
-		*	B60-3501-00	INSTRUCTION MANUAL(TIWANESE)	M	
-		*	B60-3502-00	INSTRUCTION MANUAL(ENG/FRN)	K	
625	1E	*	D21-1877-03	EXTENSION SHAFT		
△ 630	1C		E03-0115-05	AC PLUG ADAPTER	M	
△ 631	1C		E30-0505-05	AUDIO CORD		
△ 632	1E		E30-2592-15	AC POWER CORD	ME	
△ 632	1E		E30-2650-05	AC POWER CORD	K	
△ 632	1E		E30-2829-05	AC POWER CORD	TT2	
633	1C		E30-2733-05	CORD WITH PLUG		
636	1D	*	E35-1962-05	FLAT CABLE		
637	1D	*	E35-1963-05	FLAT CABLE		
638	1D,2D	*	E35-1964-05	FLAT CABLE		
645	1C	*	G01-4045-04	TORSION COIL SPRING		
646	2C	*	G11-0155-14	SOFT TAPE (40X9X2)		
-		*	G11-1389-04	CUSHION		
-		*	G11-2247-04	CUSHION		
-		*	G11-2361-04	SOFT TAPE		
-		*	H10-7365-12	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-7366-12	POLYSTYRENE FOAMED FIXTURE		
-		*	H12-2355-04	PACKING FIXTURE	TT2	
-			H20-0568-04	PROTECTION COVER	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KME	
-			H25-0319-04	PROTECTION BAG	KTET2	
-			H25-0651-04	PROTECTION BAG	TT2	
-			H50-2428-04	ITEM CARTON CASE	E	

L : Scandinavia
Y : PX(Far East, Hawaii)
Y : AAFES(Europe)

K : USA
T : Europe
X : Australia

P : Canada
E : Europe
M : Other Areas

R : Mexico
G : Germany

1 : 1050MD
5 : DM-5090
9 : DM-9090

△ Indicates safety critical components.

* New Parts

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Ref. No	Add-ress	New Parts	Parts No.	Description	Desti-nation	Re-marks
-		*	H50-2429-04	ITEM CARTON CASE	TT2	
-		*	H50-2556-04	ITEM CARTON CASE	K	
-		*	H50-2557-04	ITEM CARTON CASE	M	
650	2E		J02-1151-03	FOOT	KMTE	
650	2E		J02-1168-03	FOOT	T2	
654	1D		J19-3753-04	UNIT HOLDER		
659	1E		J42-0083-05	POWER CORD BUSHING		
-			J19-2808-05	HOLDER		
-			J61-0307-05	WIRE BAND		
660	2C		K27-2005-04	KNOB (BUTTON)	KMTE	
660	2C		K27-2199-04	KNOB (BUTTON)	T2	
663	2D		K29-4332-04	KNOB	KMTE	
663	2D	*	K29-6425-04	KNOB	T2	
664	2C		K29-6264-14	KNOB	KMTE	
664	2C	*	K29-6426-14	KNOB	T2	
△ 670	1E		L07-2270-05	POWER TRANSFORMER	TET2	
△ 670	1E		L07-2271-05	POWER TRANSFORMER	M	
△ 670	1E	*	L07-2412-05	POWER TRANSFORMER	K	
DM-9090						
601	1G	*	A01-3450-01	METALLIC CABINET		
602	1F		A09-0362-08	BATTERY COVER		
606	2F	*	A21-1969-23	DRESSING PANEL ASSY		
610	2F		A29-0868-24	PANEL		
612	2F	*	A60-1258-02	PANEL ASSY		
613	1F	*	A70-1141-05	REMOTE CONTROLLER ASSY		
616	2E	*	B07-2348-21	ESCUTCHEON		
617	2G	*	B07-2361-22	ESCUTCHEON ASSY		
618	2F	*	B10-2362-04	FRONT GLASS		
620	2G	*	B11-0356-04	COLOR FILTER		
621	1F		B19-1529-05	OPTICAL FIBER		
622	1F		B43-0302-04	KENWOOD BADGE		
-			B46-0310-03	WARRANTY CARD		
-			B58-0945-03	CAUTION CARD		
-		*	B60-3491-00	INSTRUCTION MANUAL(ENGLISH)	T	
-		*	B60-3492-00	INSTRUCTION MANUAL(FRANCH)	T	
-		*	B60-3493-00	INSTRUCTION MANUAL(GER/DUTCH)	E	
-		*	B60-3494-00	INSTRUCTION MANUAL(ITALY/SPAN)	E	
625	1H	*	D21-1891-03	EXTENSION SHAFT		
631	1F		E30-0505-05	AUDIO CORD		
632	1H		E30-2592-15	AC POWER CORD	E	
632	1H		E30-2721-05	AC POWER CORD	T	
633	1F		E30-2733-05	CORD WITH PLUG		
634	1H		E35-1890-05	FLAT CABLE		
635	1G		E35-1960-05	FLAT CABLE		
645	2F	*	G01-4044-04	TORSION COIL SPRING		
-			G01-4020-14	TORSION COIL SPRING		
-			G10-0458-04	NON-WOVEN FABRIC		
-			G10-0464-04	NON-WOVEN FABRIC		
-			G11-0155-14	SOFT TAPE (40X9X2)		
-			G11-2341-04	CUSHION		

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-		*	H10-7318-12	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-7319-12	POLYSTYRENE FOAMED FIXTURE		
-			H11-0088-04	POLYSTYRENE FOAMED BOARD		
-			H12-2301-04	PACKING FIXTURE	T	
-			H12-2382-04	PACKING FIXTURE	E	
-			H12-2383-04	PACKING FIXTURE	T	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)	E	
-			H25-0368-04	PROTECTION BAG		
-			H25-0651-04	PROTECTION BAG	T	
-		*	H50-2426-14	ITEM CARTON CASE	E	
-		*	H50-2427-14	ITEM CARTON CASE	T	
650	1H		J02-1149-05	FOOT		
651	1G,1H		J19-0306-05	LEAD HOLDER		
653	2H		J19-3056-05	UNIT HOLDER		
659	1H		J42-0083-05	POWER CORD BUSHING		
-			J19-2808-05	HOLDER		
-			J19-3703-14	UNIT HOLDER		
-			J61-0307-05	WIRE BAND		
661	2F		K27-2178-04	KNOB (BUTTON)		
662	2F		K29-3741-04	KNOB		
665	2F	*	K29-6692-04	KNOB		
666	2F	*	K29-6695-14	KNOB		
667	2G	*	K29-6697-04	KNOB		
668	2F	*	K29-6700-03	KNOB		
670	1H		L07-2270-05	POWER TRANSFORMER		
Power supply unit (X00-2840-51: DM-9090 only)						
△ C1 -3			C91-1488-05	MF 6800PF 250VAC		
CN1			E40-4245-05	PIN ASSY		
△ F1			F05-8013-05	FUSE (SEMKO) (250V T800MAL)		
CN3			J13-0075-05	FUSE CLIP		
CN5			J13-0075-05	FUSE CLIP		
△ L1			L79-0733-05	LINE FILTER		
△ S1			S40-1153-05	PUSH SWITCH		
Power supply unit (X00-2850-21: 1050MD/DM-5090)						
△ C1 -3			C91-1488-05	MF 6800PF 250VAC		
CN1			E40-4245-05	PIN ASSY		
△ F1			F05-8013-05	FUSE (SEMKO) (250V T800MAL)	5	
△ F1			F50-0067-05	FUSE(5X20)	1	
CN3 ,4			J13-0075-05	FUSE CLIP		
△ L1			L79-0733-05	LINE FILTER		
△ S1			S40-1153-05	PUSH SWITCH		
△ S2			S62-0001-05	SLIDE SWITCH	M	
Display unit (X14-4380-00: DM-9090 only)						
C3			CK45FF1H103Z	CERAMIC 0.010UF Z		

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C4			C90-3212-05	ELECTRO 47UF 6.3WV		
C5			CK45FF1H103Z	CERAMIC 0.010UF Z		
C6			CC45FSL1H101J	CERAMIC 100PF J		
C7			CK45FF1H103Z	CERAMIC 0.010UF Z		
C8			C90-3209-05	ELECTRO 10UF 6.3WV		
C9			CK45FF1H103Z	CERAMIC 0.010UF Z		
C10 -12			CK45FB1H102K	CERAMIC 1000PF K		
C13			C90-3244-05	ELECTRO 10UF 35WV		
C14			CK45FB1H102K	CERAMIC 1000PF K		
C15			CK45FF1H103Z	CERAMIC 0.010UF Z		
C16 ,17			CC45FSL1H221J	CERAMIC 220PF J		
C19 ,20			CC45FSL1H101J	CERAMIC 100PF J		
C21			CQ93FMG1H103J	MYLAR 0.010UF J		
C22			CC45FSL1H101J	CERAMIC 100PF J		
C23 ,24			CE04KW1C220M	ELECTRO 22UF 16WV		
C25 ,26			CE04KW1C221M	ELECTRO 220UF 16WV		
C27 ,28			CK45FB1H471K	CERAMIC 470PF K		
C29 ,30			CC45FSL1H101J	CERAMIC 100PF J		
C31 ,32			CC45FSL1H270J	CERAMIC 27PF J		
C33 ,34			CE04HW1HR22M	NP-ELEC 0.22UF 50WV		
C35			CF92FV1H104J	MF-C 0.10UF J		
CN1			E40-4942-05	FLAT CABLE CONNECTOR		
CN3			E40-3264-05	PIN ASSY		
J1			E11-0190-05	PHONE JACK (3P)		
-			J19-5690-03	HOLDER		
E3			J11-0809-05	WIRE CLAMPER		
L1 ,2			L92-0044-05	FERRITE CORE		
VR1			R31-0089-05	VARIABLE RESISTOR		
VR2			R10-4043-05	POTENTIOMETER(50K)		
S5 -17			S70-0031-05	TACT SWITCH		
S20 ,21			S70-0031-05	TACT SWITCH		
S25			S62-0060-05	SLIDE SWITCH		
S3			T99-0593-05	ROTARY ENCODER		
D2			HZS7.5S(B)	ZENER DIODE		
D2			RD7.5JS(B)	ZENER DIODE		
D3 -5			HSS104	DIODE		
D3 -5			1SS133	DIODE		
ED1			FIP12XM1GA	INDICATOR TUBE		
IC1			LC75710NE	MOS-IC		
IC2			NJM4580D	IC(OP AMP X2)		
Q1 -5			2SC2458(Y,GR)	TRANSISTOR		
Q1 -5			2SC3311A(Q,R)	TRANSISTOR		
Q7 ,8			2SD1450(S,T)	TRANSISTOR		
A1			W02-2571-05	OPTIC RECEIVING MODULE		
Display unit (X14-4430-00: 1050MD/DM-5090)						
C3			CK45FF1H103ZMU	CERAMIC 0.010UF Z		
C4			C90-3209-05	ELECTRO 10UF 6.3WV		
C5			C91-0085-05	CERAMIC 0.022UF N		
C6			C91-0745-05	CERAMIC 100PF K		
C7			C91-0085-05	CERAMIC 0.022UF N		
C8			C90-3209-05	ELECTRO 10UF 6.3WV		
C9			CK45FF1H103ZMU	CERAMIC 0.010UF Z		

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C10 -12 C13 C14 C15 C16 ,17			CK45FB1H102KMU C90-3244-05 CK45FB1H102KMU CK45FF1H103ZMU CC45FSL1H221JM	CERAMIC 1000PF K ELECTRO 10UF 35WV CERAMIC 1000PF K CERAMIC 0.010UF Z CERAMIC 220PF J		
C19 ,20 C21 C22 C23 ,24 C25 ,26			CC45FSL1H101JM CQ93FMG1H103J CC45FSL1H101JM CE04KW1C220M CE04KW1C221M	CERAMIC 100PF J MYLAR 0.010UF J CERAMIC 100PF J ELECTRO 22UF 16WV ELECTRO 220UF 16WV		
C27 ,28 C29 ,30 C31 ,32			CK45FB1H471KMU CC45FSL1H101JM CE04HW1H2R2M	CERAMIC 470PF K CERAMIC 100PF J NP-ELEC 2.2UF 50WV		
CN2 CN3 J1 - L1 ,2 VR1 ,2 S5 -24 S25 S3 D1 D1 D2 D2 D3 ,4 D3 ,4 ED1 IC1 IC2 Q1 -5 Q1 -5 Q7 ,8 A1			E40-4942-05 E40-3264-05 E11-0190-05 J19-5690-03 L92-0044-05 R10-4049-05 S70-0031-05 S31-1036-05 T99-0537-05 HSS104 1SS133 HZS7.5S(B) RD7.5JS(B) HSS104 1SS133 FIP12XM1GA LC75710NE NJM4580D 2SC2458(Y,GR) 2SC3311A(Q,R) 2SD1450(S,T) W02-2551-05	FLAT CABLE CONNECTOR PIN ASSY PHONE JACK (3P) HOLDER FERRITE CORE POTENTIOMETER TACT SWITCH SLIDE SWITCH ROTARY ENCODER DIODE DIODE ZENER DIODE ZENER DIODE DIODE DIODE INDICATOR TUBE MOS-IC IC(OP AMP X2) TRANSISTOR TRANSISTOR TRANSISTOR ELECTRIC CIRCUIT MODULE		
Electric unit (X25-5940-12)						
C1 C2 C3 C4 C5 C6 C7 C8 C9 C13 C14 C15 -17 C18 C19			CE04KW1C222M CC73FSL1H101J CK73FB1H103K CK45FF1H103Z CK73FF1E104Z CE04KW1A101M CK73FB1H103K CE04KW1A101M CC73FSL1H101J CE04KW1C221M CE04KW1C222M CK45FF1H103Z CK73FB1H103K CE04KW1C470M	ELECTRO 2200UF 16WV CHIP C 100PF J CHIP C 0.010UF K CERAMIC 0.010UF Z CHIP C 0.10UF Z ELECTRO 100UF 10WV CHIP C 0.010UF K ELECTRO 100UF 10WV CHIP C 100PF J ELECTRO 220UF 16WV ELECTRO 2200UF 16WV CERAMIC 0.010UF Z CHIP C 0.010UF K ELECTRO 47UF 16WV		

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C20 ,21 C22 C23 C24 C25			CE04KW1C472M CK73FB1H103K CE04KW1C220M CC73FSL1H101J CE04KW1A101M	ELECTRO 4700UF 16WV CHIP C 0.010UF K ELECTRO 22UF 16WV CHIP C 100PF J ELECTRO 100UF 10WV		
C26 ,27 C28 C29 ,30 C31 C32			CK73FB1H103K CE04KW1A471M CE04KW1H010M CK73FB1H103K C90-3542-05	CHIP C 0.010UF K ELECTRO 470UF 10WV ELECTRO 1.0UF 50WV CHIP C 0.010UF K SUPER-C 1.0F 5.5WV		
C33 C34 C35 C36 C37			CE04KW1A101M CK73FB1H103K CC73FSL1H101J CK45FF1H103Z CE04KW1H101M	ELECTRO 100UF 10WV CHIP C 0.010UF K CHIP C 100PF J CERAMIC 0.010UF Z ELECTRO 100UF 50WV		
C38 C39 C40 C41 C42			CE04KW1H100M CC73FSL1H101J CE04KW1H100M CE04KW1C332M CE04KW1H100M	ELECTRO 10UF 50WV CHIP C 100PF J ELECTRO 10UF 50WV ELECTRO 3300UF 16WV ELECTRO 10UF 50WV		
C44 C45 C46 C47 C48			CC73FSL1H150J CC73FSL1H100J CC73FSL1H220J CE04KW1A101M CK73FF1E104Z	CHIP C 15PF J CHIP C 10PF J CHIP C 22PF J ELECTRO 100UF 10WV CHIP C 0.10UF Z	1/5 1/5 1/5 1/5 1/5	
C49 C50 C51 C90 C91			CC73FCH1H080D CK73FB1H103K CK73FB1H103K CK73FF1C105Z CK73FB1H103K	CHIP C 8.0PF D CHIP C 0.010UF K CHIP C 0.010UF K CHIP C 1.0UF Z CHIP C 0.010UF K	1/5 1/5 1/5 1/5	
C92 C95 C96 C99 C101			CE04KW0J331M CE04KW0J331M CK73FB1H103K CK73FB1H103K CE04KW1A101M	ELECTRO 330UF 6.3WV ELECTRO 330UF 6.3WV CHIP C 0.010UF K CHIP C 0.010UF K ELECTRO 100UF 10WV	1/5 1/5 1/5 	
C102 C103 C104,105 C106,107 C108-112			CK45FB1H561K CE04KW1A101M CK45FB1H391KMU CC73FSL1H220J CC73FSL1H101J	CERAMIC 560PF K ELECTRO 100UF 10WV CERAMIC 390PF K CHIP C 22PF J CHIP C 100PF J	 1/5 1/5 	
C113 C121,122 C122 C123,124 C123,124			CC73FSL1H470J CC73FSL1H102J CC73FSL1H102J CC73FSL1H101J CC73FSL1H331J	CHIP C 47PF J CHIP C 1000PF J CHIP C 1000PF J CHIP C 100PF J CHIP C 330PF J	1/5 9 1/5 1/5 9	
C125,126 C127-130 C127-130 C132 C133,134			CC45FSL1H101J CC45FSL1H181JM CQ93FMG1H152J CQ93FMG1H103J CQ93FMG1H153J	CERAMIC 100PF J CERAMIC 180PF J MYLAR 1500PF J MYLAR 0.010UF J MYLAR 0.015UF J	 1/5 9 	
C135 C136,137 C138 C139,140 C139,140			CQ93FMG1H152J CQ93FMG1H681J CQ93FMG1H152J CC45FSL1H101J CC45FSL1H121J	MYLAR 1500PF J MYLAR 680PF J MYLAR 1500PF J CERAMIC 100PF J CERAMIC 120PF J	 1/5 9	

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C141			CK45FB1H471K	CERAMIC 470PF K		
C142			CE04KW1H470M	ELECTRO 47UF 50WV		
C143,144			CQ93FMG1H102J	MYLAR 1000PF J		
C145			CC73FSL1H101J	CHIP C 100PF J		
C146			CQ93FMG1H472J	MYLAR 4700PF J		
C147			CK73FB1H103K	CHIP C 0.010UF K		
C148			CQ93FMG1H472J	MYLAR 4700PF J		
C149-152			CE04KW1V220M	ELECTRO 22UF 35WV		
C153			CC45FSL1H470J	CERAMIC 47PF J		
C154,155			CC45FSL1H100D	CERAMIC 10PF D		
C156			CC45FSL1H470J	CERAMIC 47PF J		
C157-160			CC45FSL1H101J	CERAMIC 100PF J		
C162			CQ93FMG1H473J	MYLAR 0.047UF J		
C163-166			CE04KW1V220M	ELECTRO 22UF 35WV		
C167,168			CC45FSL1H101J	CERAMIC 100PF J		
C169-170			CC73FSL1H101J	CHIP C 100PF J	1/5	
C169,170			CC73FSL1H331J	CHIP C 330PF J	9	
C171,172			CC73FSL1H101J	CHIP C 100PF J		
C175-178			CC73FSL1H331J	CHIP C 330PF J		
C179			CC73FSL1H102J	CHIP C 1000PF J	9	
C180,181			CC45FSL1H101J	CERAMIC 100PF J		
C182			CE04KW1C100M	ELECTRO 10UF 16WV		
C183,184			CC73FSL1H221J	CHIP C 220PF J		
C201			CC73FSL1H220J	CHIP C 22PF J		
C202			CC73FSL1H470J	CHIP C 47PF J		
C203			CC73FSL1H220J	CHIP C 22PF J	9	
C204			CC73FSL1H470J	CHIP C 47PF J	9	
C205			CC73FSL1H100D	CHIP C 10PF D		
C206			CC73FSL1H470J	CHIP C 47PF J		
C207			CK73FB1H103K	CHIP C 0.010UF K		
C208			CC73FSL1H220J	CHIP C 22PF J	9	
C209			CK73FF1E104Z	CHIP C 0.10UF Z	9	
C210,211			CK73FF1E104Z	CHIP C 0.10UF Z		
C212			CK73FB1H103K	CHIP C 0.010UF K		
C213			CC73FSL1H220J	CHIP C 22PF J		
C214			CK73FB1H103K	CHIP C 0.010UF K		
C215			CE04KW1C470M	ELECTRO 47UF 16WV		
C216			CK73FB1H103K	CHIP C 0.010UF K		
C217			CK73FB1H103K	CHIP C 0.010UF K	9	
C218			CK73FB1H102K	CHIP C 1000PF K	9	
C219-222			CK73FB1H103K	CHIP C 0.010UF K	9	
C223,224			CK73FF1E104Z	CHIP C 0.10UF Z	9	
C225			CC73FSL1H101J	CHIP C 100PF J	9	
C230			CK73FB1H103K	CHIP C 0.010UF K	9	
C231			CE04KW1C470M	ELECTRO 47UF 16WV		
C241			CE04KW1H470M	ELECTRO 47UF 50WV		
C290			CK73FB1H103K	CHIP C 0.010UF K		
C301,302			CK73FB1H103K	CHIP C 0.010UF K		
C303			CK73FF1E104Z	CHIP C 0.10UF Z		
C304			CE04KW1A470M	ELECTRO 47UF 10WV		
C305			CK73FF1E104Z	CHIP C 0.10UF Z		
C306			CK73FB1H103K	CHIP C 0.010UF K		
C307			CE04KW1A470M	ELECTRO 47UF 10WV		
C308			CK73FB1H103K	CHIP C 0.010UF K		
C309-312			CK73FB1H103K	CHIP C 0.010UF K	9	

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C316			CK73FB1H103K	CHIP C 0.010UF K	9	
C317			CK73FB1H103K	CHIP C 0.010UF K		
C321			CK73FF1E104Z	CHIP C 0.10UF Z	9	
C322			CK73FB1H103K	CHIP C 0.010UF K		
C323,324			CK73FF1E104Z	CHIP C 0.10UF Z		
C325			CK73FB1H103K	CHIP C 0.010UF K		
CN1			E40-4807-05	PIN ASSY		
CN2			E40-8074-05	FLAT CABLE CONNECTOR		
CN3			E40-8075-05	FLAT CABLE CONNECTOR		
CN4			E40-4904-05	FLAT CABLE CONNECTOR		
CN7			E40-3251-05	PIN ASSY	9	
CN8,9			E40-8144-05	PIN ASSY		
CN10			E40-3254-05	PIN ASSY	9	
CN11			E40-3252-05	PIN ASSY	9	
CN12			E40-4296-05	FLAT CABLE CONNECTOR	1/5	
CN13			E40-8145-05	SOCKET FOR PIN ASSY		
J1			E63-0120-05	PHONO JACK	1/5	
J1			E63-0121-05	PHONO JACK	9	
J3			E63-0160-05	PHONO JACK	1/5	
J3			E63-0174-05	PHONO JACK	9	
J4			E63-0185-05	PHONO JACK	9	
J5			E11-0188-05	MINIATURE PHONE JACK(2P)	9	
J5			E11-0293-05	MINIATURE PHONE JACK(2P)	1/5	
E1			J11-0809-05	WIRE CLAMPER	9	
L1,2			L92-0131-05	FERRITE CORE		
L5			L40-1001-58	SMALL FIXED INDUCTOR(10UH,K)	1/5	
L6			L40-4791-58	SMALL FIXED INDUCTOR(4.7UH,K)	1/5	
X1			L77-1124-05	CRYSTAL RESONATOR	1/5	
X2			L78-0277-05	RESONATOR (12.000M)	9	
X3			L78-0615-05	RESONATOR (12.5MHZ)		
R1			RD14NB2E1R0J	RD 1 J 1/4W		
R2			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R5			RK73FB2A103J	CHIP R 10K J 1/10W		
R6			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R7			RK73FB2A751J	CHIP R 750 J 1/10W		
R8			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R9			RK73FB2A103J	CHIP R 10K J 1/10W		
R10,11			RK73FB2A681J	CHIP R 680 J 1/10W		
R12			RK73FB2A101J	CHIP R 100 J 1/10W		
R13			RK73FB2A104J	CHIP R 100K J 1/10W		
R14			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R15			RK73FB2A104J	CHIP R 100K J 1/10W		
R16			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R17			RK73FB2A101J	CHIP R 100 J 1/10W		
R18			RK73FB2A473J	CHIP R 47K J 1/10W		
R19			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R20			R92-1861-05	METAL GLAZE RESISTOR		
R21			R92-1860-05	METAL GLAZE RESISTOR		
R22			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R27			RD14NB2E1R0J	RD 1 J 1/4W		
R28			RK73FB2A391J	CHIP R 390 J 1/10W	1/5	
R29			RK73FB2A221J	CHIP R 220 J 1/10W	1/5	

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R30			RK73FB2A100J	CHIP R 10 J 1/10W	1/5	
R30			RK73FB2A331J	CHIP R 330 J 1/10W	9	
R32			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R33			R92-1201-05	CHIP R 220 1/2W		
R34			RK73FB2A103J	CHIP R 10K J 1/10W		
R81			RK73FB2A105J	CHIP R 1.0M J 1/10W	1/5	
R82 -85			RK73FB2A432J	CHIP R 4.3K J 1/10W	1/5	
R96			RK73FB2A471J	CHIP R 470 J 1/10W	9	
R97			RK73FB2A471J	CHIP R 470 J 1/10W		
R98			RK73FB2A150J	CHIP R 15 J 1/10W		
R99			RK73FB2A103J	CHIP R 10K J 1/10W	1/5	
R100			RK73FB2A331J	CHIP R 330 J 1/10W		
R101			RK73FB2A102J	CHIP R 1.0K J 1/10W	1/5	
R102,103			RK73FB2A473J	CHIP R 47K J 1/10W		
R104			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R105,106			RK73FB2A151J	CHIP R 150 J 1/10W		
R107			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R108,109			RK73FB2A151J	CHIP R 150 J 1/10W		
R110-113			RK73FB2A224J	CHIP R 220K J 1/10W		
R114			RK73FB2A101J	CHIP R 100 J 1/10W		
R115			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R116			RK73FB2A133J	CHIP R 13K J 1/10W		
R117,118			RK73FB2A331J	CHIP R 330 J 1/10W		
R119			RK73FB2A133J	CHIP R 13K J 1/10W		
R120			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R121			RK73FB2A101J	CHIP R 100 J 1/10W		
R122,123			RK73FB2A622J	CHIP R 6.2K J 1/10W		
R124			RK73FB2A334J	CHIP R 330K J 1/10W	9	
R124			RK73FB2A563J	CHIP R 56K J 1/10W	1/5	
R125,126			RK73FB2A473J	CHIP R 47K J 1/10W		
R140			RK73FB2A101J	CHIP R 100 J 1/10W	1/5	
R140-144			RK73FB2A101J	CHIP R 100 J 1/10W	9	
R141,142			RK73FB2A331J	CHIP R 330 J 1/10W	1/5	
R143,144			RK73FB2A101J	CHIP R 100 J 1/10W	1/5	
R145			RK73FB2A392J	CHIP R 3.9K J 1/10W	1/5	
R145			RK73FB2A472J	CHIP R 4.7K J 1/10W	9	
R150-152			RK73FB2A392J	CHIP R 3.9K J 1/10W	1/5	
R150-152			RK73FB2A472J	CHIP R 4.7K J 1/10W	9	
R153-155			RK73FB2A152J	CHIP R 1.5K J 1/10W	9	
R153-155			RK73FB2A183J	CHIP R 18K J 1/10W	1/5	
R156			RK73FB2A101J	CHIP R 100 J 1/10W		
R157			RK73FB2A152J	CHIP R 1.5K J 1/10W	9	
R157			RK73FB2A183J	CHIP R 18K J 1/10W	1/5	
R158-163			RK73FB2A821J	CHIP R 820 J 1/10W		
R164,165			RK73FB2A104J	CHIP R 100K J 1/10W		
R166			RK73FB2A101J	CHIP R 100 J 1/10W		
R167,168			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R169,170			RK73FB2A101J	CHIP R 100 J 1/10W		
R171,172			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R173-175			RK73FB2A101J	CHIP R 100 J 1/10W		
R176			RK73FB2A331J	CHIP R 330 J 1/10W		
R177			RK73FB2A472J	CHIP R 4.7K J 1/10W	1/5	
R178,179			RK73FB2A332J	CHIP R 3.3K J 1/10W	9	
R180			RK73FB2A334J	CHIP R 330K J 1/10W	9	
R180			RK73FB2A563J	CHIP R 56K J 1/10W	1/5	

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R183,184			RK73FB2A474J	CHIP R 470K J 1/10W		
R187-189			RK73FB2A331J	CHIP R 330 J 1/10W		
R190			RK73FB2A471J	CHIP R 470 J 1/10W	1/5	
R191,192			RD14NB2E332J	RD 3.3K J 1/4W		
R193			RK73FB2A471J	CHIP R 470 J 1/10W		
R194			RK73FB2A223J	CHIP R 22K J 1/10W	9	
R195			RK73FB2A4R7J	CHIP R 4.7 J 1/10W	1/5	
R196			RK73FB2A1R8J	CHIP R 1.8 J 1/10W	1/5	
R197			RK73FB2A4R7J	CHIP R 4.7 J 1/10W	1/5	
R198			RK73FB2A100J	CHIP R 10 J 1/10W	T1	
R198			RK73FB2A100J	CHIP R 10 J 1/10W	1/5	
R199			RK73FB2A223J	CHIP R 22K J 1/10W	9	
R201			RK73FB2A103J	CHIP R 10K J 1/10W		
R202,203			RK73FB2A104J	CHIP R 100K J 1/10W		
R204			RK73FB2A103J	CHIP R 10K J 1/10W	9	
R205-206			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R207			RK73FB2A104J	CHIP R 100K J 1/10W		
R208			RK73FB2A103J	CHIP R 10K J 1/10W		
R209			RK73FB2A102J	CHIP R 1.0K J 1/10W	9	
R210			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R211			RK73FB2A331J	CHIP R 330 J 1/10W		
R212			RK73FB2A151J	CHIP R 150 J 1/10W		
R213			RK73FB2A151J	CHIP R 150 J 1/10W	9	
R214			RK73FB2A151J	CHIP R 150 J 1/10W		
R215			RK73FB2A151J	CHIP R 150 J 1/10W	9	
R216,217			RK73FB2A151J	CHIP R 150 J 1/10W		
R218			RK73FB2A150J	CHIP R 15 J 1/10W		
R219,220			RK73FB2A221J	CHIP R 220 J 1/10W		
R221			RK73FB2A104J	CHIP R 100K J 1/10W		
R222			RK73FB2A333J	CHIP R 33K J 1/10W	9	
R223-229			RK73FB2A104J	CHIP R 100K J 1/10W		
R230			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R231			RK73FB2A243J	CHIP R 24K J 1/10W	9	
R232,233			RK73FB2A562J	CHIP R 5.6K J 1/10W	9	
R234			RK73FB2A151J	CHIP R 150 J 1/10W	9	
R235-237			RK73FB2A331J	CHIP R 330 J 1/10W	9	
R238			RK73FB2A471J	CHIP R 470 J 1/10W	1/5	
R239			RK73FB2A471J	CHIP R 470 J 1/10W	9	
R240			RK73FB2A221J	CHIP R 220 J 1/10W	9	
R241-243			RK73FB2A471J	CHIP R 470 J 1/10W	9	
R244			RK73FB2A221J	CHIP R 220 J 1/10W	9	
R245			RK73FB2A331J	CHIP R 330 J 1/10W	9	
R246,247			RK73FB2A101J	CHIP R 100 J 1/10W		
R283-285			RK73FB2A101J	CHIP R 100 J 1/10W	9	
R286,287			RK73FB2A102J	CHIP R 1.0K J 1/10W	9	
R288,289			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R290			RK73FB2A100J	CHIP R 10 J 1/10W	9	
R291			RK73FB2A473J	CHIP R 47K J 1/10W	9	
R292			RK73FB2A104J	CHIP R 100K J 1/10W		
R293			RK73FB2A331J	CHIP R 330 J 1/10W		
R294			RK73FB2A104J	CHIP R 100K J 1/10W		
R295,296			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R298			RK73FB2A105J	CHIP R 1.0M J 1/10W	9	
R299,300			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R301			RK73FB2A473J	CHIP R 47K J 1/10W	9	

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R302			RK73FB2A473J	CHIP R 47K J 1/10W		
R303-310			RK73FB2A104J	CHIP R 100K J 1/10W		
R311			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R312			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R313-315			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R316			RK73FB2A123J	CHIP R 12K J 1/10W		
R317			RK73FB2A822J	CHIP R 8.2K J 1/10W		
R318			RK73FB2A333J	CHIP R 33K J 1/10W		
R319-321			RK73FB2A104J	CHIP R 100K J 1/10W		
R322,323			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R324,325			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R326,327			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R328-335			RK73FB2A104J	CHIP R 100K J 1/10W		
R336			RK73FB2A272J	CHIP R 2.7K J 1/10W		
R337			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R338			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R339,340			RK73FB2A104J	CHIP R 100K J 1/10W		
R341			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R342			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R343			RK73FB2A104J	CHIP R 100K J 1/10W		
R344			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R345-348			RK73FB2A104J	CHIP R 100K J 1/10W		
R349-351			RK73FB2A103J	CHIP R 10K J 1/10W		
R353			RK73FB2A103J	CHIP R 10K J 1/10W		
R354			RK73FB2A104J	CHIP R 100K J 1/10W		
R355,356			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R357,358			RK73FB2A104J	CHIP R 100K J 1/10W		
R359			RK73FB2A331J	CHIP R 330 J 1/10W		
R360			RK73FB2A104J	CHIP R 100K J 1/10W		
R361,362			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R363-365			RK73FB2A104J	CHIP R 100K J 1/10W		
R366			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R368,369			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R370			RK73FB2A473J	CHIP R 47K J 1/10W		
R371			RK73FB2A114J	CHIP R 110K J 1/10W	9	
R372			RK73FB2A104J	CHIP R 100K J 1/10W		
R375-378			RK73FB2A104J	CHIP R 100K J 1/10W		
R379-385			RK73FB2A101J	CHIP R 100 J 1/10W		
R386-389			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R390			RK73FB2A331J	CHIP R 330 J 1/10W		
R391			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R393			RK73FB2A104J	CHIP R 100K J 1/10W	9	
R394			RK73FB2A101J	CHIP R 100 J 1/10W		
W1 -3			R92-0670-05	CHIP R 0 OHM	1/5	
W4			R92-0670-05	CHIP R 0 OHM	9	
W5			R92-0670-05	CHIP R 0 OHM	1/5	
W6 -7			R92-0670-05	CHIP R 0 OHM	9	
W8			R92-0670-05	CHIP R 0 OHM		
D1			D3SBA20F03	DIODE		
D2			DA204U	DIODE		
D3			U1BC44	DIODE		
D4			MA111	DIODE		
D5			UDZ5.1B	ZENER DIODE		
D7			UDZ2.7B	ZENER DIODE		

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D8			MA111	DIODE		
D9 ,10			S5688B(TPB5)	DIODE		
D11			D3SBA20F03	DIODE		
D12			MA111	DIODE		
D13			UDZ5.6B	ZENER DIODE		
D14 ,15			MA113	DIODE		
D16			UDZ6.2B	ZENER DIODE		
D17			MA111	DIODE		
D18			U1BC44	DIODE		
D19			UDZ18B	ZENER DIODE		
D20			UDZ15B	ZENER DIODE		
D21			S5688B(TPB5)	DIODE		
D22 ,23			MA111	DIODE		
D26			DA204U	DIODE		
D28			DAP202U	DIODE	1/5	
D29			MA111	DIODE		
D30			DA204U	DIODE	1/5	
D31 ,32			MA111	DIODE		
D33			DA204U	DIODE	9	
IC1 ,2			ICP-N10	ANALOGUE IC		
IC3			NJM4558M	IC(OP AMP X2)		
IC4			PST993D-T	ANALOGUE IC		
IC5			TL431CLP	MOS-IC		
IC6			KAN03	CUSTOM IC	1/5	
IC8			CS5334	MOS-IC	1/5	
IC8		*	CS5335	MOS-IC	9	
IC10,11			NJM4580ED	ANALOGUE IC		
IC13,14			NJM4580ED	ANALOGUE IC		
IC21			TC74HCU04AF	IC(HEX INVERTER SMD)	9	
IC22			TC74HCU04AF	IC(HEX INVERTER SMD)		
IC23			LC8904Q	MOS-IC	9	
IC24			KAN03	CUSTOM IC	9	
IC25			SM5844AF	MOS-IC	9	
IC26			TC74HC157AF	MOS-IC		
IC27		*	LC89170M	MOS-IC	9	
IC28		*	UPD784035GC801	MI-COM IC	9	
IC29			HM62256BLFP-7T	MEMORY IC	9	
IC29			HM62256BLFP-8T	MEMORY IC	9	
IC29			HM62256BLFP12T	MEMORY IC	9	
IC30			TC74HC373AF	IC(8 bit LATCH)	9	
IC31		*	UPD784215GF508	MI-COM IC		
IC32			TC74HC4094AF	MOS-IC		
IC33			TC74HC373AF	IC(8 bit LATCH)		
IC34			HM62256BLFP-7T	MEMORY IC		
IC34			HM62256BLFP-8T	MEMORY IC		
IC34			HM62256BLFP12T	MEMORY IC		
IC35			TA8409S	MOS-IC		
IC36			TC74HCT7007AF	IC(HEX BUFFER)		
IC37			HD74HCT126FPEL	MOS-IC		
IC38			TC74HCT7007AF	IC(HEX BUFFER)		
IC39			TC74VHC244F	MOS-IC		
Q1			2SD2012	TRANSISTOR		
Q2			2SD2061	TRANSISTOR		
Q3			2SK246(Y,GR)	FET		
			UN5219	DIGITAL TRANSISTOR		

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Q5 ,6 Q7 Q8 Q9 ,10			UN5212 2SD2012 2SD2061 2SA1576A(R,S) 2SC4081(R,S)	DIGITAL TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q11 Q11 Q12 Q13 Q16 -19			2SD2012 2SD2061 2SC4081(R,S) 2SA954(L,K) 2SD1450(S,T)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q20 Q23 Q24 Q25 Q26			UN5212 2SC4081(R,S) 2SA1576A(R,S) UN5212 UN5212	DIGITAL TRANSISTOR TRANSISTOR TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR	9	
Q27 Q30 Q31 Q31 Q32			UN5212 UN5112 DTC143TUA UN5216 UN5112	DIGITAL TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR		
A1 A2			W02-1181-05 W02-1114-05	OPTIC RECEIVING MODULE OSCILLATING MODULE		
MD control unit (X29-2580-00)						
CN1 CN2 CN3			E40-3260-05 E40-3261-05 E40-8076-05	PIN ASSY PIN ASSY FLAT CABLE CONNECTOR		
S1 S2			S64-0028-05 S68-0074-05	LEVER SWITCH PUSH SWITCH		
PH1			T95-0140-05	OPTO ISOLATOR (RPI-574)		
Processor unit (X32-3470-00: DM-9090 only)						
C101 C103 C104 C105-108 C109			CE04KW1A101M CK73FB1H102K CQ93FMG1H103J CK45FB1H471K CC73FCH1H050C	ELECTRO 100UF 10WV CHIP C 1000PF K MYLAR 0.010UF J CERAMIC 470PF K CHIP C 5.0PF C		
C110 C112 C113 C114,115 C116			CE04KW1A101M CK45FF1H103Z CK45FB1H102K CC73FSL1H100D CC45FSL1H220J	ELECTRO 100UF 10WV CERAMIC 0.010UF Z CERAMIC 1000PF K CHIP C 10PF D CERAMIC 22PF J		
C117 C119,120 C121,122 C123,124 C125,126			CC73FSL1H100D CE04KW0J331M CF92FV1H474J CE04KW0J331M CF92FV1H474J	CHIP C 10PF D ELECTRO 330UF 6.3WV MF-C 0.47UF J ELECTRO 330UF 6.3WV MF-C 0.47UF J		
C127-130 C131 C133,134 C135,136 C139			CC45FSL1H121J CQ93FMG1H391K CQ93FMG1H103J CC73FSL1H100D CQ93FMG1H121K	CERAMIC 120PF J MYLAR 390PF K MYLAR 0.010UF J CHIP C 10PF D MYLAR 120PF K		
C140 C141,142 C143-146			CE04KW1A101M CC73FCH1H080D CQ93FMG1H391K	ELECTRO 100UF 10WV CHIP C 8.0PF D MYLAR 390PF K		

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C147 C155-158 C165,166 C168 C173			CC45FSL1H101J CC45FSL1H331J CE04KW1A101M CK73FB1H103K CK73FB1H103K	CERAMIC 100PF J CERAMIC 330PF J ELECTRO 100UF 10WV CHIP C 0.010UF K CHIP C 0.010UF K		
C174 C175-182 C183,184 C185,186 C187,188			CQ93FMG1H121K CK73FB1H471K CE04KW0J331M CF92FV1H474J CE04KW0J331M	MYLAR 120PF K CHIP C 470PF K ELECTRO 330UF 6.3WV MF-C 0.47UF J ELECTRO 330UF 6.3WV		
C189,190 C252 C257 C258 C266			CF92FV1H474J CE04KW1A101M CK45FB1H222K CK45FB1H471K CE04KW1H2R2M	MF-C 0.47UF J ELECTRO 100UF 10WV CERAMIC 2200PF K CERAMIC 470PF K ELECTRO 2.2UF 50WV		
C275 C280 C283,284			CC45FSL1H151J CE04HW1H3R3M CK45FB1H471K	CERAMIC 150PF J NP-ELEC 3.3UF 50WV CERAMIC 470PF K		
L2 L3 L7 L8 L9			L40-2291-17 L40-4781-17 L40-1001-58 L92-0044-05 L40-4791-58	SMALL FIXED INDUCTOR SMALL FIXED INDUCTOR SMALL FIXED INDUCTOR(10UH,K) FERRITE CORE SMALL FIXED INDUCTOR(4.7UH,K)		
X1			L77-1124-05	CRYSTAL RESONATOR		
R101-104 R106 R107 R108 R109			RK73FB2A471J RD14NB2E3R9J RK73FB2A221J RK73FB2A102J RK73FB2A101J	CHIP R 470 J 1/10W RD 3.9 J 1/4W CHIP R 220 J 1/10W CHIP R 1.0K J 1/10W CHIP R 100 J 1/10W		
R111-118 R119-126 R135 R177-184 R185-192			RK73FB2A471J RN14BK2C3901F RK73FB2A471J RK73FB2A332J RK73FB2A511J	CHIP R 470 J 1/10W RN 3.90K F 1/6W CHIP R 470 J 1/10W CHIP R 3.3K J 1/10W CHIP R 510 J 1/10W		
R193-200 R260 R262 R285 W1 -3			RN14BK2C3901F RK73FB2A105J RK73FB2A151J RD14NB2E3R9J R92-0670-05	RN 3.90K F 1/6W CHIP R 1.0M J 1/10W CHIP R 150 J 1/10W RD 3.9 J 1/4W CHIP R 0 OHM		
D32 D36 ,37 D36 ,37 IC2 IC4			UDZ5.1B HSS104 1SS133 ICP-N10 SM5842AP	ZENER DIODE DIODE DIODE ANALOGUE IC MOS-IC		
IC5 IC7 -14 IC15,16 IC24 IC31-34			KAN05 TC74AC74F NJM4580E TC74VHCU04F NJM4580E	CUSTOM IC MOS-IC ANALOGUE IC MOS-IC ANALOGUE IC		
Q31			2SK246(Y,GR)	FET		
MD mechanism unit (X33-1100-00)						
C21 ,22 C101			CC73FCH1H020C C92-0628-05	CHIP C 2.0PF C CHIP-TAN 10UF 10WV		

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C102			CK73FB1E104K	CHIP C 0.10UF K		
C103,104			C92-0628-05	CHIP-TAN 10UF 10WV		
C105			CK73FB1H103K	CHIP C 0.010UF K		
C106			CC73FCH1H102J	CHIP C 1000PF J		
C107,108			CK73FF1E104Z	CHIP C 0.10UF Z		
C109			CK73FB1H223K	CHIP C 0.022UF K		
C110			CK73FB1E104K	CHIP C 0.10UF K		
C111			CK73FB1H683K	CHIP C 0.068UF K		
C112			CK73FB1H472K	CHIP C 4700PF K		
C113			CK73FF1C105Z	CHIP C 1.0UF Z		
C115			CK73FB1C224K	CHIP C 0.22UF K		
C116			CK73FB1H223K	CHIP C 0.022UF K		
C117,118			CK73FB1E104K	CHIP C 0.10UF K		
C119			C92-0628-05	CHIP-TAN 10UF 10WV		
C121			C92-0048-05	ELECTRO 100UF 6.3WV		
C122			CK73FB1H103K	CHIP C 0.010UF K		
C123			CK73FF1E104Z	CHIP C 0.10UF Z		
C127			CK73FF1E104Z	CHIP C 0.10UF Z		
C128			CK73FB1H103K	CHIP C 0.010UF K		
C129			CK73FB1C474K	CHIP C 0.47UF K		
C130			CC73FSL1H101J	CHIP C 100PF J		
C131			CK73FB1H153K	CHIP C 0.015UF K		
C132			CK73FB1C474K	CHIP C 0.47UF K		
C133			CK73FB1H472K	CHIP C 4700PF K		
C134,135			CK73FF1E104Z	CHIP C 0.10UF Z		
C136			C92-0048-05	ELECTRO 100UF 6.3WV		
C141			CK73FF1E104Z	CHIP C 0.10UF Z		
C142-144			CC73FSL1H101J	CHIP C 100PF J		
C146			CK73FF1E104Z	CHIP C 0.10UF Z		
C151			C92-0048-05	ELECTRO 100UF 6.3WV		
C152			CK73FF1E104Z	CHIP C 0.10UF Z		
C153			CK73FB1H103K	CHIP C 0.010UF K		
C156			CK73FF1E104Z	CHIP C 0.10UF Z		
C158			CK73FB1H682K	CHIP C 6800PF K		
C160,161			C92-0167-05	CHIP-ELE 10UF 10WV		
C163,164			CK73FB1H103K	CHIP C 0.010UF K		
C167,168			CK73FF1E104Z	CHIP C 0.10UF Z		
C169			C92-0628-05	CHIP-TAN 10UF 10WV		
C171			CK73FF1E104Z	CHIP C 0.10UF Z		
C181			C92-0048-05	ELECTRO 100UF 6.3WV		
C182,183			CK73FF1E104Z	CHIP C 0.10UF Z		
C184			C92-0149-05	CHIP-ELE 22UF 8WV		
C185			C93-0031-05	CHIP-C 1000P 500V		
C187			C92-0048-05	ELECTRO 100UF 6.3WV		
C188			CK73FB1H103K	CHIP C 0.010UF K		
C189			CK73FB1H333K	CHIP C 0.033UF K		
C190			C92-0048-05	ELECTRO 100UF 6.3WV		
C191			CK73FF1E104Z	CHIP C 0.10UF Z		
C195			CK73FF1C105Z	CHIP C 1.0UF Z		
C196,197			CK73FF1E104Z	CHIP C 0.10UF Z		
C200			C93-0032-05	CHIP C 10UF 10WV		
CN101			E40-8074-05	FLAT CABLE CONNECTOR (29P)		
CN102			E40-8075-05	FLAT CABLE CONNECTOR (19P)		
CN103			E40-8077-05	FLAT CABLE CONNECTOR (22P)		

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CN104			E40-8078-05	PIN ASSY (2P)		
CN105			E40-8076-05	FLAT CABLE CONNECTOR (15P)		
L1 ,2			L33-0545-05	CHOKE COIL (10UH)		
L3 ,4			L33-0369-05	CHOKE COIL (100UH)		
L5 -11			L79-1216-05	LINE FILTER		
R103			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R104			RK73FB2A103J	CHIP R 10K J 1/10W		
R105			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R106			RK73FB2A335J	CHIP R 3.3M J 1/10W		
R107			RK73FB2A474J	CHIP R 470K J 1/10W		
R108,109			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R110			RK73FB2A103J	CHIP R 10K J 1/10W		
R112			RK73FB2A473J	CHIP R 47K J 1/10W		
R113			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R115			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R117			RK73FB2A474J	CHIP R 470K J 1/10W		
R120			RK73FB2A101J	CHIP R 100 J 1/10W		
R121			RK73FB2A104J	CHIP R 100K J 1/10W		
R123			RK73FB2A221J	CHIP R 220 J 1/10W		
R124,125			RK73FB2A101J	CHIP R 100 J 1/10W		
R127			RK73FB2A101J	CHIP R 100 J 1/10W		
R131			RK73FB2A103J	CHIP R 10K J 1/10W		
R132			RK73FB2A104J	CHIP R 100K J 1/10W		
R133			RK73FB2A684J	CHIP R 680K J 1/10W		
R134			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R135			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R136			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R137			RK73FB2A101J	CHIP R 100 J 1/10W		
R140			RK73FB2A151J	CHIP R 150 J 1/10W		
R141			RK73FB2A561J	CHIP R 560 J 1/10W		
R142,143			RK73FB2A103J	CHIP R 10K J 1/10W		
R144			RK73FB2A101J	CHIP R 100 J 1/10W		
R146-148			RK73FB2A101J	CHIP R 100 J 1/10W		
R150			RK73FB2A221J	CHIP R 220 J 1/10W		
R158,159			RK73FB2A104J	CHIP R 100K J 1/10W		
R161-163			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R164			RK73FB2A681J	CHIP R 680 J 1/10W		
R165			RK73FB2A104J	CHIP R 100K J 1/10W		
R166			R92-1854-05	RN 2.2 K 1/2W		
R167			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R169			R92-1853-05	CHIP-RN 1 1/4W		
R170,171			RK73FB2A103J	CHIP R 10K J 1/10W		
R173			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R175			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R177			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R179			RK73FB2A473J	CHIP R 47K J 1/10W		
R180,181			RK73FB2A103J	CHIP R 10K J 1/10W		
R182,183			RK73FB2A473J	CHIP R 47K J 1/10W		
R184,185			RK73FB2A103J	CHIP R 10K J 1/10W		
R188-190			RK73FB2A103J	CHIP R 10K J 1/10W		
W1 -4			R92-0670-05	CHIP R 0 OHM		
W101			R92-0670-05	CHIP R 0 OHM		
W108			R92-0679-05	CHIP R 0 OHM		
W109			R92-0670-05	CHIP R 0 OHM		

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PARTS LIST

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W111 W114 W116 W178 W186,187			R92-0670-05 R92-0670-05 R92-0670-05 R92-0670-05 R92-0679-05	CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM CHIP R 0 OHM		
W195,196 W198-201			R92-0670-05 R92-0670-05	CHIP R 0 OHM CHIP R 0 OHM		
D1 ,2 D101 IC1 IC2 IC3			F1J6TP MA111 CXA2523AR CXD2652AR TC7S08FU	DIODE DIODE ANALOGUE IC MOS-IC MOS-IC		
IC4 IC5 IC6 IC7 IC8			TC7WU04FU TC74ACT540FS X24C01AS-2.7 HM51W4400BTT-7 BH6511FS	MOS-IC MOS-IC MEMORY IC MEMORY IC ANALOGUE IC		
IC10 Q1 Q2 ,3 Q4 ,5 Q6			L88MS33T FMW1 DTA144EUA DTC114YUA 2SA1576A(R,S)	ANALOGUE IC TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR TRANSISTOR		
Q7 Q8 Q9 Q10			2SB798-DL 2SJ278 2SK1764 DTC114EUA	TRANSISTOR FET FET DIGITAL TRANSISTOR		
MD mechanism Assy (D40-1533-05: MDM-04)						
1 2 3 4 5	2B 1B 1A 2A 2B		A10-3329-08 D10-3690-08 D10-3698-08 D10-3759-08 D13-1784-08	CHASSIS ASSY LEVER ASSY ARM ASSY SLIDER ASSY (HD) GEAR ASSY (T)		
6 7 8 9 10	1A 1B 3A 1B 2A		J11-0824-08 J19-5766-08 A11-1113-08 A11-1116-08 D10-3742-08	CLAMPER ASSY HOLDER ASSY SUB SHASSIS (FRAME) SUB SHASSIS (TOP) LEVER (DOOR)		
11 12 13 15 16	3A 2B 3A 2A 2A		D13-1792-08 G02-1616-08 G02-1618-08 D10-3685-08 D10-3694-08	RACK (GEAR) FLAT SPRING (THRUST) FLAT SPRING (SUB) SHAFT (SUB) SHAFT (MAIN)		
17 18 19 20 21	1A 2B 1A 1A 2A		D21-1859-08 D10-3686-08 D10-3687-08 D10-3689-08 D10-3692-08	SHAFT (JOINT) SLIDER (MAIN) SLIDER (LD) ARM (CLAMP) ARM (CHANGE)		
22 23 24 25 26	2B 2A 2A 1A 2A		D13-1786-08 D13-1787-08 D13-1788-08 D13-1789-08 D13-1790-08	GEAR (WORM) GEAR (MOTOR-T) GEAR (MOTOR-L) GEAR (INTERMEDIATE LA) GEAR (INTERMEDIATE LB)		
27 28	2A 1A		D13-1791-08 G13-0560-08	GEAR (MAIN) CUSHION		

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29 30 31 32 33	3A,3B 1A 1A 2B 1A		J02-1178-08 G01-3964-08 G01-3965-08 G01-3966-08 G01-3967-08	INSULATOR EXTENSION SP TORSION SP EXTENSION SP EXTENSION SP (S/HD)		
34 35 36 37 38	2A 3B 2B 1B 1A		G01-4014-08 G10-0146-04 N19-1101-04 N19-1105-04 N19-0366-04	EXTENSION SP (DOOR) NON-WOVEN-FABRIC POLY WS 1.2*3.0*0.5CUT POLY WS 1.6*3.5*0.5CUT POLY WS 2.1*4.0*0.5CUT		
39 40 41 42 47	1A 2B 3A 3B 2B		G16-0877-04 E35-1715-08 E35-1780-08 J80-0012-08 S33-1022-05	SHEET (TRAY) WIRING HARNESS FLAT CABLE FPC PUSH SWITCH SPPB12		
48 DM FM LM PU	2A,3A 3A 3A 3A 3A		J26-0052-08 T42-0871-08 T42-0880-05 T42-0881-05 T25-0060-05	PCB ASSY (X29-2580-00) MOTOR ASSY DC MOTOR DC MOTOR OPTICAL PICKUP HEAD		
RH	3A		T30-0013-05	RECORD HEAD		

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PARTS LIST

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SPECIFICATIONS

1050MD / DM-5090

[Format]

System	Minidisc digital audio system
Laser	Semiconductor laser
Recording method	Field modulation overwrite method
Audio compression	ATRAC (Adaptive TRansform Acoustic Coding)
Playing rotation	Approx. 400 rpm ~ 900 rpm (CLV)

[D/A conversion]

D/A conversion	1 Bit+ D.R.I.V.E. conversion
Oversampling.....	8 fs (352.8 kHz)

[A/D converter]

A/D converter.....	4 th order sigma-delta conversion
Sampling frequency	44.1 kHz

[Digital audio performance]

Frequency response (playback mode)	8 Hz ~ 20 kHz, ± 1 dB
Signal to noise ratio (playback mode)	More than 100 dB
Dynamic range (playback mode).....	More than 94 dB
Wow & flutter	Less than unmeasurable limit
Analog input sensitivity / input impedance	500 mV / 22 k Ω or more
Analog output level / output impedance	2.0 V / Less than 300 Ω
Headphone output	20 mW/32 Ω load
Digital input	
Coaxial	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm
Digital output	
Coaxial	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm

[General]

Power consumption	18 W
Dimensions	W : 440 mm (17 - 5 / 16 ")
.....	H : 94 mm (3 - 11 / 16 ")
.....	D : 373 mm (14 - 11 / 16 ")
Weight (Net).....	4.9 kg (10.8 lb)

1050MD/DM-5090/DM-9090

SPECIFICATIONS

DM-9090

[Format]

System.....	Minidisc digital audio system
Laser	Semiconductor laser
Recording method	Field modulation overwrite method
Audio compression	ATRAC (Adaptive TRansform Acoustic Coding)
Playing rotation	Approx. 400 rpm ~ 900 rpm (CLV)

[D/A conversion]

D/A conversion	1 Bit (24 bit Fine D.R.I.V.E.)
Oversampling	8 fs (352.8 kHz)

[A/D converter]

A/D converter.....	4 th order sigma-delta conversion+ D.R.I.V.E. conversion
Sampling frequency.....	44.1 kHz

[Digital audio performance]

Frequency response (playback mode)	8 Hz ~ 20 kHz, ± 1 dB
Signal to noise ratio (playback mode)	More than 110 dB
Dynamic range (playback mode).....	More than 98 dB
Total harmonic distortion (1 kHz, playback mode)	Less than 0.004 %
Wow & flutter	Less than unmeasurable limit
Analog input sensitivity / input impedance.....	500 mV / 22 k Ω
Analog output level / output impedance	2.0 V / Less than 300 Ω
Headphone output.....	20 mW/32 Ω load
Digital input	
Coaxial.....	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm
Digital output	
Coaxial.....	0.5 Vp-p / 75 Ω
Optical(Wave length 660 nm)	- 15 dBm ~ - 21 dBm

[General]

Power consumption.....	20 W
Dimensions	W : 440 mm (17 - 5 / 16 ")
	H : 125 mm (4 - 15 / 16 ")
	D : 373 mm (14 - 11 / 16 ")
Weight (Net)	5.4 kg (11.9 lb)

Note:

Component and circuit are subject to modification to insure best operation under differing local conditions. This manual is based on Europe (E) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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